COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 21.] June, 1951. [No. 6.

DISEASES CAUSED BY BACTERIA AND FUNGI

EVANS, J. B., BUETTNER, L. G. & NIVEN, C. F., JR. (1950.) **Evaluation of the coagulase test in the study of staphylococci associated with food poisoning.**—*J. Bact.* 60. 481-484. [Authors' summary copied *verbatim*.] 1577

Feeding tests with rhesus monkeys failed to demonstrate enterotoxin production by any of 24 coagulase-negative staphylococci isolated from foods suspected of causing food poisoning. Enterotoxin was produced by 4 out of 5 coagulase-positive strains isolated from wholesome frozen foods and by 5 out of 7 coagulase-positive strains isolated from disease processes in man.

CHODKOWSKI, A. & LANCASTER, J. E. (1949.) **Methods for the recovery of *Str. agalactiae* from outside the bovine udder.**—*J. comp. Path.* 59. 265-274. 1578

To isolate *Str. agalactiae* from the skin of the teats and other parts of the body, and from cowshed and dairy equipment, swabs from the area in question were shaken in sterilized milk, containing 1:20,000 potassium tellurite and 1:500 boracic acid. After 2–3 hours' incubation 0·1–0·3 ml. was plated on a sheep blood agar plate containing 1:750,000 crystal violet, 1:1,000 aesculin and 1:3,000 thallium sulphate. To isolate the organisms from milkers' hands the hands of the milkers were washed in sterile milk and the washings were treated as above. Besides being isolated from the skin of the udder the organisms could also be isolated from the air of the cowshed after overnight incubation of milk previously exposed to air contamination.

—A. MAYR-HARTING.

FOLEY, E. J. & LEE, S. W. (1948.) **Factors concerned in streptococcal growth in the bovine udder and their relation to the pathogenesis and treatment of bovine mastitis by penicillin.**—*Cornell Vet.* 38. 367-380. 1579

A general discussion of the subject. The "invasion—infection—inflammation" concept of the genesis of bovine mastitis is considered in relation to the presence of lactenin, serum and the phase of growth of the invader. The action of penicillin varies with time and temperature and the maintenance of adequate concentration is paramount. Thus five doses of 20,000 units at five milking periods would be better than a single dose of 100,000 units (100% cure against 63%). It is suggested that higher levels of penicillin should be effective against staphylococcal mastitis.—MALCOLM WOODBINE.

HOLZ, K. (1950.) Die Bedeutung der Streptokokkenerkrankungen des Schweines. **[Streptococcal diseases of swine.]**—*Dtsch. tierärztl. Wschr.* 57. 165-172. 1580

Streptococcal infections of young pigs have some histological features which are best explained on an allergic basis. It is advisable, besides dealing with the actual infection, to consider this allergic component when treating such diseases.—A. MAYR-HARTING.

MIRICK, G. S., RICHTER, C. P., SCHAUB, I. G., FRANKLIN, R., MACCLEARY, R., SCHIPPER, G. & SPITZNAGEL, J. (1950.) **An epizootic due to *Pneumococcus* type II in laboratory rats.**—*Amer. J. Hyg.* 52. 48-53. [Authors' summary copied *verbatim*.] 1581

An epizootic due to *Pneumococcus* type II has persisted in a rat colony for 3·5 years with the carrier rate varying from 40 to 60 per cent throughout nearly the whole period. The majority of the animals which died had bacteremia and many in addition had pneumonia, empyema and pericarditis. The relative therapeutic values of penicillin, aureomycin and anti-pneumococcus antiserum were tested.

HUITEMA, H. (1948.) De reinigende werking van doorlopend water (regen) ten aanzien van miltvuursporen in den bodem. **[The cleansing action of rain in freeing the soil from anthrax spores.]**—*Ned.-ind. Bl. Diergeneesk.* 55. 211-219. [English summary.] 1582

H. observed that outbreaks of anthrax on Timor Island occurred during the latter half

of the dry season and the beginning of the rainy season. He suspected that climatic factors—the fall and rise of the water table—might influence the survival of the organisms in the soil and deposit them within reach of grazing stock. He discussed some of the literature dealing with the relationship between outbreaks of anthrax and the ground water level. The soil in the endemic areas in Indonesia is more porous than European soils and has a low humus content. It was suspected that the porosity of the soil allowed the rain water to wash the spores from the more superficial layers to deeper levels. In tests using anthrax spores it was proved that the spores could be carried by water through a depth of 2 cm. of sand, but water did not remove all the spores from the superficial layer. Further tests revealed that rising water could transport the spores to the surface from depths of 4·6, and 8 cm. of sand and garden soil. H. concluded that, whenever conditions for multiplication of the organisms in the soil are favourable, the rising of the underground water to the surface conveys the organisms to the surface and exposes animals to infection. [The seasonal incidence of outbreaks of anthrax in Indonesia and other tropical regions and its incidence in relation to water levels in Europe suggest that outbreaks of anthrax, blackleg and even other bacterial diseases are possibly closely related to the invasion of stock by *Fasciola* spp.]—P. L. LE ROUX.

CASTELO, M. (1949.) Informe sobre tuberculosis bovina en el Uruguay. **[Tuberculosis of cattle in Uruguay.]**—*Hoja Tisiológica.* **9.** 1-22. **1583**

TB. in cattle is discussed in general and details are given of the incidence of the infection in Uruguay. Of 53,908 dairy cattle tested during 1942-47 in the Montevideo district 5,110 yielded positive and 1,127 doubtful tuberculin reactions, making a total of 11·56% of infected and suspected animals. In the other districts reactors among dairy cattle varied from 8–17%. Udder lesions were found P.M. in 50 out of 500 infected cows.

The number of infected beef cattle was about 1% for the whole of the cattle of the country. Since 1941 the examination of milk and of live cattle for TB. has been compulsory. Positive reactors are slaughtered and a compensation up to about $60. per head is paid to owners. During the period under review 6,498 cattle had to be slaughtered. Of 4,637 condemned carcasses examined during 1942-45, localized lesions were found in 2,223 and generalized lesions in 2,414.

The relationship between the disease in cattle and human infection and conventional control measures are discussed.—E.G.

TEUNISSEN, G. H. B. (1948.) Tuberculose bij hond en kat. **[Tuberculosis in dogs and cats.]**—*Tijdschr. Diergeneesk.* **73.** 614-621. **1584**

T. compared the incidence and clinical picture in an unstated number of cases in his Utrecht clinic with those recorded by other authors. The incidence in one year was 0·2% of the total number of animals treated, and only one animal (a dog) was more than two years old. In all cases the infection was of the bovine type and in all but one case appeared to be derived from milk.

In a six-year-old dog with a history which was stated to exclude aerogenous infection, there was no trace of disease in the alimentary tract, but there was severe pleural TB. with slight pulmonary involvement.

Swelling of the mesenteric glands, particularly in the jejunal area, was the commonest lesion. Lesions of the peritoneum occurred in some cases. Other organs affected were the spleen, kidneys and pancreas. True cutaneous tuberculosis was common in cats, but the author has not seen this lesion in a dog. He suggests that some of the reported cases of cutaneous TB. in cats were wrongly diagnosed. TB. of bones and joints has been a rare finding.

Calcification of lesions was rare, but in one dog there was calcification of numerous tubercles in the peritoneum and in the sternal lymph nodes. This relative absence of calcification makes X-ray diagnosis more difficult.

In general, the process, even with localized lesions, is rapid, glandular enlargement becoming very marked within 14 days, and there is much exudate, often so clear as to resemble a transudate.

The tuberculin test was not found completely reliable.—W. TATHAM THOMPSON.

MITCHELL, C. A. & DUTHIE, R. C. (1950.) **Tuberculosis of the common crow.**—*Canad. J. comp. Med.* **14.** 109-117. **1585**

In 25 of 263 crows, most of which were captured in Western Ontario, there were lesions of TB. It was not known whether this represented the approximate amount of infection in the crow population, nor could it be determined whether they had become infected from a common source by indirect exposure to infected fowls or by crow to crow transference. Crows, on account of their habits, might transfer infection to fowls, but no opportunity occurred of obtaining conclusive evidence on this point. The infection in the crows was caused by avian type

tubercle bacilli, but a degree of temporary modification of the organism appeared to have followed its residence in this host.

—R. GWATKIN.

LEYVA, J. F. (1949.) **Biochemical studies on tuberculosis. VI. The diagnostic significance of the nucleic acid test in tuberculosis.**—*J. Philipp. med. Ass.* **25.** 75-81. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 940-941. (1949).] **1586**

The nucleic acid test reveals the presence of the nucleic acid compound released from the tubercle bacillus during its proliferation, and is therefore a better and earlier test for the diagnosis of TB. than the tuberculin test.

SOHIER, R. (1950.) Réaction d'hémagglutination, type Dubos Middlebrook réalisée avec une tuberculine purifiée. Résultats obtenus. **[The Dubos-Middlebrook haemagglutination reaction using a purified tuberculin.]**—*Ann. Inst. Pasteur.* **78.** 283-285. **1587**

This reaction has given satisfactory results with 227 sera. The most constant and strongest positive reactions have been noted in recently infected children.—W. R. BETT.

MÄDER. (1949.) Kann die Tuberkulose nur durch züchterische Massnahmen bekämpft und getilgt werden? **[Can TB. be controlled by breeding?]**—*Dtsch. tierärztl. Wschr.* **56.** 181-184. **1588**

Owing to the failure of methods at present used in Germany, M. proposes to supplement the tuberculin tests with improvements in hygiene, clinical examination and breeding measures. A hereditary predisposition to TB. is assumed, and accordingly only bulls from TB.-free ancestors should be used.—ROY MACK.

BRANDT, N. G., SANDAGE, C. N. & BIRKELAND, J. M. (1950.) **Effect of intravenous injection of tuberculin on leucocytes of normal and tuberculous rabbits.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 315-316. [Authors' summary copied *verbatim*.] **1589**

Following the intravenous injection of P.P.D. into tuberculous rabbits there is a decrease in the total number of white cells and lymphocytes. The maximum decrease occurs in 6 to 9 hours and is followed by a gradual return to normal. There is also frequently a delayed increase in neutrophiles.

NEDELKOVITCH, J. (1950.) Mode de multiplication du bacille de Koch. Morphologie du bacille et de ses colonies. Quelques sources d'erreurs. **[Method of multiplication of** *Mycobacterium tuberculosis*.**]**—*Ann. Inst. Pasteur.* **78.** 177-189. **1590**

Multiplication takes place by two methods, (1) direct division of the rod, (2) formation of black intrabacillary granules, their liberation, and germination, and subsequent direct division. Stained with Ziehl-Neelsen, the protoplasm nearly always reveals fragmentation, the morphological expression of direct transverse division. When the protoplasm forms granules which stain metachromatically deep blue-black, these do not germinate so long as they remain within the bacillus, but become central protoplasm again and begin direct division. After five days the colonies already form chains of acid-fast rods. When the organisms are grown on Buc or Löwenstein medium, they are acid fast at all stages of multiplication.

The paper is illustrated by three colour-plates.—W. R. BETT.

DUBOS, R. & NOUFFLARD, H. (1950.) Milieux semi-synthétiques à l'albumine pour la culture des bacilles tuberculeux. **[Semi-synthetic media for** *Mycobacterium tuberculosis*.**]**—*Ann. Inst. Pasteur.* **78.** 208-226. **1591**

Tween 80 medium and albumin medium are suitable for growing, identifying, and counting all the strains of *Mycobact. tuberculosis*, for determining drug-resistance and for producing BCG.—W. R. BETT.

PRAMER, D., HEUKELEKIAN, H. & RAGOTZKIE, R. A. (1950.) **Survival of tubercle bacilli in various sewage treatment processes. 1. Development of a method for the quantitative recovery of mycobacteria from sewage.**—*Publ. Hlth. Rep., Wash.* **65.** 851-859. [Authors' summary copied *verbatim*.] **1592**

A satisfactory quantitative method for the enumeration of tubercle bacilli in sewage materials is described. This method which employs a pretreatment procedure and cultivation on a selective medium, suppressed 87 to 94 per cent of sewage organisms and permitted successful quantitative recovery of tuberculous organisms present in a given sample.

The laboratory application of the developed method to the problems of this study reveals that the sewage treatment processes best suited for the removal of tuberculous organisms are (1) chemical coagulaion with ferric chloride, followed by settling; (2) continuous filtration through sand at a rate of 240,000 gal./acre/day; and (3) chlorination to a 0·9 ppm free chlorine residual. Used in combination, the effectiveness of these methods is, of course, enhanced. Except for chlorination, the efficiency of each of the treatment processes in the removal of *M. tuberculosis avium* was more or less equal to that for sewage organisms. In chlorination,

however, residuals of less than 0·9 ppm appear to be ineffective against tuberculous organisms.

A preliminary survey was made for mycobacteria in a sanatorium sewage treatment plant which utilizes sedimentation, trickling filtration, and chlorination. Acid-fast rods were found in the raw sewage and in diminished numbers in the plant effluent and the stream receiving the effluent. They were also found in the fresh solids and digested sludge in greater numbers than in the raw sewage. In general, these findings correspond to those obtained in laboratory treatment tests. The results of these field studies will be further refined and evaluated in future work, which will include typing and virulence testing of the recovered acid-fast organsims.

KNAYSI, G., HILLIER, J. & FABRICANT, C. (1950.) **The cytology of an avian strain of *Mycobacterium tuberculosis* studied with the electron and light microscopes.**—*J. Bact.* **60.** 423-447. [Authors' summary copied *verbatim.*] **1593**

The structure and microchemistry of the Sheard strain of *Mycobacterium tuberculosis* var. *avium* were studied with the electron and light microscopes. The cell consists of a thin, highly ductile cell wall, a thin cytoplasmic membrane, a poorly stainable cytoplasm containing many rodlike micelles of unknown nature, a number of cell sap vacuoles (several to 20), and 1 to 5 nuclei (mostly 2 to 4). Dimensions of these structures are given. The cell sap vacuoles contain material in solution and, usually, nearly spherical micelles, apparently a by-product of metabolism. The resting nucleus consists of a lipid-containing chromatin layer and a core that stains red with Giemsa's solution. A similar structure was observed in the resting nucleus of *Escherichia coli*. In submerged cultures, the cells are embedded in slime of unusual properties; it is highly stainable and highly opaque to the electron beam. Old techniques are evaluated and new techniques of electron and light microscopy are given and discussed in their relation to the physicochemical properties of the cell and cellular structures.

CHARGAFF, E. & SAIDEL, H. F. (1949.) **On the nucleoproteins of avian tubercle bacilli.**—*J. biol. Chem.* **177.** 417-428. **1594**

The isolation, fractionation and spectroscopic examination of a nucleoprotein from avian tubercle bacilli are described. It contained desoxypentose and pentose nucleic acids. Disintegration experiments with lanthanum nitrate, sodium desoxycholate and saturated sodium chloride solutions are described. The protein could not be precipitated with flavianate.

—NESTA DEAN.

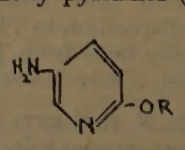
CARMICHAEL, J. & MACLAY, M. H. (1950.) **The use of chicks in the evaluation of anti-tuberculous agents.**—*J. Path Bact.* **62.** 363-370. [Authors' summary copied *verbatim.*] **1595**

The use of avian tuberculosis in chicks for biologically testing anti-tuberculous agents against an established infection is described. A number of advantages are claimed for the method as a preliminary screening test. An experiment is described in which the anti-tuberculous activity of streptomycin was clearly demonstrated and sodium para-amino salicylate was shown to be much less effective.

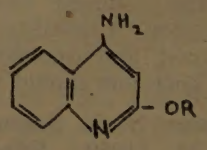
BÜCHI, J., HURNI, H. & LIEBERHERR, R. (1949.) Die tuberkulostatische Wirkung von 2-0xy-4-amino-chinolin-Derivaten. [**The tuberculostatic action of 4-amino-2-hydroxyquinoline derivatives.**]—*Helv. chim. Acta.* **32.** 1806-1814. [Abst. in *Bull. Hyg., Lond.* **24.** 1006. (1949), copied *verbatim.* Signed: A. BRACKEN.] **1596**

The relationship between tuberculostatic activity and chemical constitution is still very obscure. Anti-tuberculous substances differ widely in their chemical nature. However, if the examples taken are restricted to a narrow class of similarly constituted products, *e.g.*, a homologous series, a certain regularity can be observed.

The authors quote the case of the 5-amino-2-alkoxy pyridines (I)



I



II

Here increase in the magnitude of the radical R from methyl, CH_3- to hexyl, $C_6H_{13}-$ was accompanied by an increase in tuberculostatic activity.

In this paper the preparation of a number of 4-amino-2-alkoxy quinolines (II) is described. The anti-tuberculous activities of four of these are examined against a human strain of *Mycobacterium tuberculosis*. In the four chosen quinoline derivatives R was methyl, CH_3-; *n*-propyl, $CH_3 \cdot CH_2 \cdot CH_2$-; *n*-butyl, $CH_3 CH_2 \cdot CH_2 \cdot CH_2$-; or *n*-hexyl, $CH_3 \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_2 \cdot CH_2$-. Within this restricted group there was an increase in tuberculostatic activity from methyl to *n*-butyl with a slight falling off in the *n*-hexyl derivative.

Thus in this type of compound there is a tendency for anti-tuberculous activity to increase with the magnitude of the side chain.

DUBOS, R. J. (1950.) **The effect of organic acids on mammalian tubercle bacilli.**—*J. exp. Med.* **92.** 319-332. [Author's summary slightly modified.] **1597**

The growth of tubercle bacilli *in vitro* was inhibited by the addition of very low concentrations of the sodium salts of certain organic acids to a variety of liquid and agar culture media containing whole serum or serum albumin. Capric acid was the most active of the compounds tested, but inhibition of growth occurred also with the aliphatic acids having a shorter carbon chain. Lactic acid was also growth-inhibitory, whereas the keto and dicarboxylic acids tested were inactive in this respect. The inhibitory activity of the aliphatic acids and of lactic acid increased as the pH of the medium was lowered by addition of HCl. It was greater in media enriched with serum or with oleic acid-albumin complex, but was otherwise fairlv independent of the composition of the medium. The inhibitory effect appears to be bacteriostatic rather than bactericidal and to depend upon a disturbance of the normal metabolic processes of the bacilli. Some of the long chain fatty acids caused a marked enhancement of growth when used in low concentrations and in admixture with enough serum albumin to overcome their toxicity. The significance of these findings is discussed with reference to the survival and multiplication of tubercle bacilli *in vivo* within inflammatory and caseous areas, which are known to be often acidic and to contain high concentrations of organic acids.

KIMLER, A. (1950.) **The in vitro effect of analogs of vitamin K on *Mycobacterium tuberculosis* var. *hominis*, strain H37Rv.**—*J. Bact.* **60.** 469-472. [Author's summary copied *verbatim*.] **1598**

The *in vitro* tuberculostatic effect of four analogs of vitamin K, i.e., 4-amino-2-methyl-1-naphthol hydrochloride ("synkamin"), 2-methyl-1,4-naphthoquinone sodium bisulfite ("hykinone"), and tetrasodium 2-methyl-1,4-naphthoquinone diphosphoric acid ester ("synkayvite" and "kappadione"), were studied. The critical concentration for "synkamin" was 1 μg per ml, for "hykinone" 2 μg per ml, and for "synkayvite" and "kappadione 100 μg per ml. A possible explanation for their effect, and for the differences in their effect, on *Mycobacterium tuberculosis* var. *homonis* H37Rv is presented.

CAPUTI, F. (1950.) L'associazione streptomicina-tubercolina nel trattamento della tuberculosi sperimentale delle cavia. **[Streptomycin together with tuberculin in the treatment of experimental TB. in g. pigs.]**—*Boll. Ist. sieroter. Milano.* **29.** 6-11. [Abst. from English summary.] **1599**

In continuation of his previous investigations, showing that streptomycin has a detoxicating effect on Koch's old tuberculin, C. studied experimental TB. in two groups of g. pigs; one group was given streptomycin alone, and the other group streptomycin together with tuberculin, after being previously treated with streptomycin. The tuberculin was well tolerated by the animals, but there was no evidence that the combined action of the two agents influenced the course of the disease.

CATHIE, I. A. B. & MACFARLANE, J. C. W. (1950.) **Adjuvants to streptomycin in treating tuberculous meningitis in children.**—*Lancet.* **259.** 784-789. [Authors' summary copied *verbatim*.] **1600**

The results obtained in two comparable series of tuberculous meningitis are presented. In a series of 20 cases treated with streptomycin alone there were 5 (25%) survivors, 4 with normal C.S.F. In a series of 40 cases treated with streptomycin, streptokinase, most of them with sulphetrone, and intraventricular drainage where indicated, there were 23 (58%) survivors, 17 with normal C.S.F. The part played by the adjuvants used in the series of 40 cases is discussed. The results obtained by other treatment centres are summarised.

SARBER, R. W., NUNGESTER, W. J. & STIMPERT, F. D. (1950.) **Immunization studies with irradiated tuberculosis vaccines.**—*Amer. Rev. Tuberc.* **62.** 418-427. [Spanish summary.] **1601**

The antigenicity of BCG is largely destroyed by short exposure to ultra-violet irradiation. Similar exposure of a virulent human type strain (199RB) does not lead to the same destruction of the antigenic component. The vaccine obtained protects g. pigs to at least the same extent as does BCG. The stability of irradiated tuberculosis vaccines is a matter of months rather than of days as with classical BCG.
—W. R. BETT.

ANON. (1950.) Schlussbericht der Expertenkommission zur Beurteilung von Fragen über die Schutzimpfung gegen die Rindertuberkulose. **[Final report of the commission on immunization against tuberculosis in cattle. (Switzerland.)]**—*Schweiz. Arch. Tierheilk.* **92.** Sept. Spec. No. pp. 1-38. [In French, German and Italian.] **1602**

Repeated immunization with live vaccine of

the P-strain of the tubercle bacillus, an attenuated bovine strain [See SAXER, *V.B.* **20.** 343.] is said to be safe in cattle, resulting in the production of a complete or incomplete tuberculous primary complex. Tubercle bacilli are not found in the milk of cows inoculated with the vaccine. Routine use of this method in the whole of Switzerland is not recommended, as it does not guarantee absolute protection against exogenous infections with tubercle bacilli. Newborn calves should be immunized in heavily infected districts where complete separation of tuberculin-negative young animals from tuberculin-positive or diseased animals is impossible. Immunized animals must not be placed on TB.-free farms since an occasional tuberculin-positive reaction makes it difficult to differentiate between allergy to the P-strain and a superinfection that may have meanwhile occurred.

—W. R. BETT.

ANON. (1949.) **The Hyge B.C.G. statistics. [Human.]**—*Lancet.* **257.** 291. **1603**

A summary is presented of two papers by HYGE, T. V. (1949), [*Nord. Med.* **41.** 1058; & *Ugeskr. Laeg.* **111.** 560]. Of 94 schoolgirls in Denmark, originally tuberculin-negative, exposed to infection, and not vaccinated with BCG, 70 became tuberculin-positive, 41 developing tuberculosis. Of 106 schoolgirls, originally tuberculin-negative, exposed to infection, and vaccinated with BCG, two developed pulmonary tuberculosis. Of 105 originally tuberculin-positive girls exposed to infection, four developed pulmonary tuberculosis. Hyge recommends BCG vaccination of all who are tuberculin-negative.—W. R. BETT.

HERTZBERG, G. (1949.) **An attempt to distinguish between vaccination-allergy and superinfection-allergy in the B.C.G. material of the Oslo Public Health Service.**—*Acta. tuberc. scand.* **23.** 315-337. **1604**

When a positive tuberculin reaction in a BCG-vaccinated person is due only to BCG, he is vaccination-allergic; when subsequently exposed to natural infection with tubercle bacilli, he becomes superinfected and is superinfection-allergic. The difference is of practical importance. H. vaccinated with BCG about 18,500 persons between 1932 and 1946, and from a statistical analysis attempted to answer three questions: (1) for how long is BCG vaccination effective?; (2) to what extent does BCG vaccination protect against TB.?; (3) what is the quantitative effectiveness of BCG vaccination?

—W. R. BETT.

MYREN, J. (1950.) **Is an increased tuberculin reaction in a person [vaccinated] with BCG indicative of infection with virulent tubercle bacilli?**—*Acta tuberc. scand.* **29.** 293-310. [In English. Author's summary amended.] **1605**

An increased tuberculin reaction in persons vaccinated with BCG, observed during the following two years, is not always indicative of a virulent superinfection.

GRAUBNER, E. (1950.) Risiko intrakutánni premunice (vakcinace) BCG. **[The risk of intracutaneous premunition (vaccination) with BCG.]**—*Čas. Lék. čes.* **89.** 11-18. [English summary.] [Abst. in *Bull Hyg., Lond.* **25.** 689. (1950), copied *verbatim.* Signed: D. J. BAUER.] **1606**

In 1948 compulsory vaccination with BCG was introduced in the Pilsen area; of 41,452 persons between the ages of one and 20 years liable for vaccination, 34,835 presented themselves and were given a tuberculin test, and 25,988 negative reactors were vaccinated with 0·1 cc. BCG vaccine intradermally. The vaccine was obtained from the State Serum Institute in Copenhagen; the patch test was used on children between the ages of one and 12 years, patch and Mantoux test with ten tuberculin units between 12 and 14, and the Mantoux test with one to ten units between 15 and 20 years. Generalized allergic reaction to the tuberculin test was seen in one instance. Disappearance of tuberculin allergy was frequently noted when the results of the test were compared with a similar test which had been carried out some months previously on 9,339 school children who were also included in the present test; thus of two groups of 1,166 and 1,189 school children who were positive at the first test, 281 and 155 respectively had become negative at the second test. A similar disappearance of allergy was also noted in 67 positive reactors observed between 1946 and 1949.

The following types of complication were observed among those who had received BCG vaccination; (a) local reactions, including early reaction after 14 days, ascribed to bacterial allergy, and suppuration due to infection with pyogenic organisms (36 cases); (b) lymphadenitis (33 cases), with perforation in six cases; suppuration could be controlled with penicillin, but the glands took several months to subside; (c) generalized cutaneous reactions, of which four cases are described; (d) reaction in patients with active tuberculosis. These various types of complication are illustrated with histories and photographs.

VORWALD, A. J., DWORSKI, M., PRATT, P. C. & DELAHANT, A. B. (1950.) **BCG vaccina-**

tion in silicosis.—*Amer. Rev. Tuberc.* **62.** 455-474. [Spanish summary.] **1607**

The BCG strain used in the experiments was derived from a culture, strain 826L, Research Foundation, Tice Laboratories, Chicago, Illinois. It produced progressive, fatal pulmonary TB. in g. pigs, the resistance of which had been lowered by the inhalation of quartz dust. Viable BCG organisms have been isolated from the lungs and tracheobronchial lymph nodes of tuberculosilicotic animals and control animals up to eighteen months after intracutaneous injection. BCG vaccination would appear to be contra-indicated in those with increased susceptibility to TB. resulting from exposure to quartz dust.—W. R. Bett.

Johnson, H. W. (1945.) **The Johne's disease problem, and relation of Johne's disease to the tuberculosis no visible lesion problem.**—*Proc. 49th ann. Meet. U.S. Live Stk. sanit. Ass.*, 1945. pp. 137-141. **1608**

The problem of Johne's disease was discussed and the possibility that it may eventually reach a position of major economic importance in the U.S.A. was recorded.

About 7,000 cattle in Alabama were submitted to the intradermal johnin test and to the tuberculin test and two were positive to johnin and mammalian tuberculin and 17 positive to johnin alone. J. cited examination of the intestinal tract of 175 "no lesion reaction" cases; in 31 of these *Mycobact. johnei* was present.—W. R. Kerr.

Larsen, A. B., Vardaman, T. H. & Groth, A. H. (1950.) **Preliminary studies on the effect of streptomycin and other agents on** *Mycobacterium paratuberculosis*.—*Amer. J. Vet. Res.* **11.** 374-377. [Authors' summary modified.] **1609**

In vitro studies of promin, 4-aminosalicylic acid, stilbamidine diisethionate, pentamidine isethionate, and streptomycin indicate that streptomycin was the only one of these agents that inhibited the growth of cultures of *Mycobact. johnei* in low concentrations.

It was possible to produce in a cow under treatment, a blood level of streptomycin high enough to inhibit growth of *M. johnei* cultures, when blood from the treated animal was added to the growing cultures. This animal had received 2·5 g. of streptomycin per 100 lb. of body weight during the 24-hour period.

Streptomycin, when administered in doses not exceeding 36 g. and over periods not exceeding 60 hours, produced temporary improvement in cows with clinical symptoms of Johne's disease. Improvement ceased three to four weeks after treatment was discontinued, and the animals subsquently died or were slaughtered as incurable. However, more complete investigations are needed before final conclusions are reached. Such studies should include animals in various stages of the disease and reactors without clinical symptoms.

Morse, E. V. (1948.) **Bovine pyelonephritis. Parts I-III.**—*Cornell Vet.* **38.** 135-147. **1610**

Morse, E. V. (1948.) **Pyelonephritis. IV. Physiological and bacteriological studies of eight cases of pyelonephritis treated with penicillin.**—*Ibid.* 273-285. [Absts from author's summaries.] **1611**

I - III. Details were given of the penicillin sensitivity of the cultures of 43 strains of *Corynebacterium renale* studied, of the best methods of administering penicillin and of its use in the treatment of bovine pyelonephritis.

IV. Further details were given on penicillin therapy.

The injection of 1,000,000 I.U. of calcium penicillin, Romansky formula, subcutaneously once per day for ten days usually removes the symptoms of pyelonephritis temporarily; however, recurrence is observed in the majority of cases. Such treatment may salvage a cow for a lactation period or two, however, and be economically feasible even though the cow does eventually die of the disease.

Azizuddin, I. M. (1950.) **Studies on bovine endometritis. The lesions produced in the uterus of guinea-pigs by injections of suspensions of** *Corynebacterium pyogenes, Corynebacterium equi* **and** *Staphylococcus albus*. —*Indian vet. J.* **27.** 1-8. [Abst. from author's summary.] **1612**

Bacterial suspensions of *Corynebacterium pyogenes, C. equi* and *Staph. albus* were injected into ligated segments of the uterus of g. pigs. *C. pyogenes* and *Staph. albus* gave rise to lesions comparable to those met with in natural cases of endometritis in cows.

Lovell, R., Foggie, A. & Pearson, J. K. L. (1950.) **Field trials with** *Corynebacterium pyogenes* **alum-precipitated toxoid.** — *J. comp. Path.* **60.** 225-229. [Authors' summary copied *verbatim*.] **1613**

During the summer months of 1942-45, field trials were made in Ulster in order to assess the prophylactic value of *C. pyogenes* alum-precipitated toxoid against summer mastitis. There were 40 cases of infection in 2123 immunised cattle and 47 in a control series of 2022; percentages of 1·9 and 2·3 respectively.

As judged by the time distribution of the cases and the antitoxin responses, there is need for a study to be made of the general problem of antibody response to non-living vaccines in cattle.

PRIER, J. E. & ALBERTS, J. O. (1950.) **The effects of aureomycin and of penicillin against *Erysipelothrix rhusiopathiae in vitro* and *in vivo*.**—*J. Bact.* **60.** 139-143. [Authors' summary copied *verbatim*.] **1614**

The *in vitro* activity of aureomycin, penicillin, and streptomycin was tested against four strains of *E. rhusiopathiae*. Penicillin was more active than aureomycin or streptomycin. It required 0·09 to 0·78 μg per ml of penicillin, 12·5 to 200 μg per ml of aureomycin, or 6·25 to 50 μg per ml of streptomycin to inhibit the organism after 96 hours of incubation.

Twenty-nine pigeons were treated with aureomycin and fourteen with procaine penicillin. Twenty mg of aureomycin at the time of infection and 24 hours later decreased mortality, but lower dosages were not effective. Ten thousand units of penicillin at the time of infection and 24 hours later proved effective.

Thirty-nine experimentally infected turkeys were treated with aureomycin and ten with procaine penicillin. Dosages of 100 to 200 mg of aureomycin 24 and 48 hours after infection did not appreciably decrease mortality, but 100,000 and 150,000 units of penicillin prevented all deaths.

Six uninfected turkeys received 100 mg of aureomycin in one dose, and five received a total of 400 mg in two intramuscular doses 24 hours apart. No evidence of toxicity was observed.

BAKOS, K. & LEHNERT, E. (1950.) Eine Prüfung des Schwedischen avirulenten Rotlaufimpfstoffes auf sein immunisierendes Vermögen mittelst der perkutanen Infektionsmethode. **[Immunizing capacity of the Swedish avirulent erysipelas vaccine tested by percutaneous infection.]**—*Nord Vet.-Med.* 2. 113-121. [In German. English and German summaries. Abst. from English summary.] **1615**

By means of the percutaneous infection method described by Fortner and Dinter (1944) the safety and immunizing effect of "an avirulent erysipelas vaccine" was tested on six vaccinated pigs and five controls. Of the vaccinated animals one did not react at all at the test infection; one developed only a slight temporary rise in temperature; of the oher four, two developed slight and two medium severe localized skin erysipelas; in one of these animals a temporary general reaction of a slighter degree also occurred. Of the five controls three died from the test inoculation while the other two developed severe local skin reactions. In accordance with practical experience, the immunizing effect of "the avirulent erysipelas vaccine" was therefore estimated as good. This vaccine has been used in practice in Sweden for several years with good results.

NARDELLI, L. (1950.) Sui metodi moderni di vaccinazione contro il malrosso dei suini con particolare riguardo al metodo di Traub. **[Vaccination against swine erysipelas, especially Traub's method.]**—*Riv. Med. Vet. Zootec.* 2. 109-132. [English and French summaries.] **1616**

N. gave results of tests of the value of immunization by the method described by Staub and that by Traub. He considered that with the first type of vaccine the viability of the micro-organism was insufficiently stable. He preferred the other type.—G. P. MARSHALL.

HARRISON, A. P., JR. & HANSEN, P. A. (1950.) **Lactobacilli from turkeys.**—*J. Bact.* **60.** 543-555. [Authors' summary and conclusions slightly modified.] **1617**

Lactobacillus was found to be the predominating bacterial genus in the cecal feces of turkeys. *L. bifidus* was the most numerous anaerobe and *L. acidophilus* the most numerous facultative anaerobe in the turkeys tested. *L. plantarum* and *L. fermenti* were also encountered, but in smaller numbers than the other two species.

Although *L. bifidus* and *L. acidophilus* isolated from the ceca of turkeys may be considered typical, some variation from the accepted description of the species was noticed in the physiological characters of the avian strains of *L. plantarum;* about 50 per cent of the strains did not ferment salicin; none of the strains would grow without added riboflavin; the maximum, optimum, and minimum temperatures were slightly higher, no cultures developing at 20°C; and one strain was motile. However, the *L. plantarum* strains isolated agreed with the original definition in all major characters, and particularly in fermenting melibiose and in forming inactive lactic acid with a surplus of the dextro form.

KRANEVELD, F. C. & DJAENOEDIN, R. (1948.) Over zogenaamde locale septichaemie bij varkens. **[Pasteurellosis in pigs characterized by local swelling of the throat.]**—*Ned-ind. Bl. Diergeneesk.* **55.** 81-84. [Abst. from English summary.] **1618**

In the past pigs killed for human con-

sumption have been found in Indonesia to be infected with what is described as a mild degree of *Pasteurella* infection, the lesions being local and often visible only after scalding, in the form of dark-red patches and swellings in the throat region.

Such carcasses have been passed for human consumption after the lesions have been removed. It had been the custom to speak of the lesions found in these pigs as "local septicaemia". This term is rejected by the authors as misleading. They oppose the passing of such carcasses for human consumption.

NOBREGA, P. & BUENO, R. C. (1950.) Influencia da temperatura na conservação da viabilidade e virulencia da *Pasteurella avicida*. **[Effect of temperature on viability and virulence of *Pasteurella avicida*.]**—*Bol. Soc. paul. Med. vet.* **8.** 189-194. [English abst. copied *verbatim*.] **1619**

Broth cultures of *P. avicida* are still viable after two years when kept in sealed ampoules at room temperature averaging 17·6°C. When the cultures are kept in the refrigerator at temperatures ranging from 2 to 4°C., their viability is reduced to 0% at the end of one year. The viability sinks to 40% at the end of one year when the cultures are kept at 37°C.

The virulence of the cultures maintained at room temperature keeps constant during the two year period, the LD_{50}, as determined by Reed and Muench's method, being the same in the beginning and at the end of the experiment.

ELBERG, S. S. & CHENG-LEE, H. (1950) **Studies on dissociation in *Pasteurella multocida*.**—*J. comp. Path.* **60.** 41-50. **1620**

The pathways of dissociation in *Past. septica* were followed. A clear-cut correlation was found to exist between fluorescence and virulence, the green-gold fluorescent colonies consisting of maximally virulent organisms, the non-fluorescent ones of avirulent organisms. Blue fluorescence indicated diminished virulence, and red-fluorescent organisms had only very little virulence left. No correlation was found between colony form and virulence. Mice and rabbits, both highly susceptible to infection, did not influence the direction of dissociation. The injected variant was invariably recovered in pure state at P.M. examination. In laboratory media dissociation from fluorescence to non-fluorescence took place readily, but normal horse serum seemed to exercise some selective action on the virulent gold-fluorescent variant.

—A. MAYR-HARTING.

LERNER, I. M., TAYLOR, L. W. & BEACH, J. R. (1950.) **Evidence for genetic variation in resistance to a respiratory infection in chickens.**—*Poult. Sci.* **29.** 862-869. [Authors' summary copied *verbatim*.] **1621**

Evidence for genetic differences in specific resistance to a respiratory disease, tentatively diagnosed as atypical infectious coryza resulting from uncomplicated *H. gallinarum* infection, as measured by the ability to maintain production during an epidemic is presented. Of particular interest is the fact that the flock in which these observations were made was free of any respiratory disturbances for 17 years prior to the outbreak. The demonstrated differences were thus due to chance differentiation of genotypes in non-interbreeding lines.

WALKER, D. J. (1949.) **Colibacillosis in sheep. The case history of a probable outbreak.**—*Yearb. Inst. Insp. Stk., N.S.W.* 1949. pp. 45-46. **1622**

Deaths occurred in a flock of adult Merino wethers which had suffered severely during a rail journey. In affected animals lameness, sluggishness and excessive thirst were observed. In the late stages when sheep were recumbent, they suffered considerable pain. At P.M. examination there was a distended gall bladder, yellowish liver, congested kidneys and severe gastro-enteritis. Coliform organisms were cultured from heart, liver bile and lymph node material taken within 20–30 min. after death.—H. MCL. GORDON.

STEMPEN, H. (1950.) **Demonstration of the chromatinic bodies of *Escherichia coli* and *Proteus vulgaris* with the aid of the phase contrast microscope.**—*J. Bact.* **60.** 81-87. [Author's summary slightly modified.] **1623**

Dark phase contrast microscopy reveals the chromatinic bodies of young, living cells of *Bacterium coli* and *Proteus vulgaris* as light areas distinguished from the darker cytoplasm. These young cells do not contain detectable fat. The test for glycogen is negative in *Proteus vulgaris* and inconclusive in *Bact. coli*. The presence of volutin is doubtful. Cell division does not occur until there are at least two chromatinic bodies present in the cell. One chromatinic body is distributed to each of the sister cells. The succeeding cell division is preceded by a division of the chromatinic body into two. The details in the division of the chromatinic bodies are difficult to observe. Differentiation between chromatinic bodies and cytoplasm is distinct in the late lag and logarithmic phases. In later stages this differentiation is lost and the cells appear homogeneous.

CLARENBURG, A. & VINK, H. H. (1948.) Diagnostiek van salmonellose bij het levende en geslachte dier. **[Diagnosis of salmonellosis in live and slaughtered animals.]**—*Tijdschr. Diergeneesk.* 73. 98-101. 1624

When salmonella organisms are isolated only from the liver, the muscles may be considered positive, for by the use of enrichment medium the authors were able to isolate salmonella from them.

Meat from such animals can be eaten after sterilization. There is no danger of the production of a thermostable toxin. An animal is considered a carrier when salmonella are isolated from the faeces three times at intervals of ten days. The O agglutination titre of bovine carriers varies between 1:40 and 1:320, the H titre between 1:640 and 1:10,000.

—C. A. VAN DORSSEN.

MOL, M. J. & v.d. KAMP, C. J. G. (1948.) Salmonellose bij geslachte dieren. **[Salmonellosis in slaughter animals.]**—*Tijdschr. Diergeneesk.* 73. 594-596. 1625

Salmonella dublin was isolated once from a cow (with mastitis) and once from a calf. *Salmonella enteritidis* was isolated twice from calves.—C. A. VAN DORSSEN.

BERGSMA, C. (1949.) Salmonellosis bij slachtdieren. **[Salmonella infection in slaughter animals.]**—*Tijdschr. Diergeneesk.* 74. 654-658. 1626

At the abattoir of Dordrecht (Netherlands) *Salmonella dublin* was found 14 times (8 calves, 5 cows and 1 sheep), *Salmonella newport* was isolated once from the liver of a cow with traumatic gastritis, the first isolation from cattle in the Netherlands.—C. A. VAN DORSSEN.

CLARENBURG, A., VINK, H. H. & SCHUURMANS, R. (1950.) Salmonella-dragers bij runderen. **[Bovine *Salmonella* carriers.]** — *Tijdschr. Diergeneesk.* 75. 435-438. 1627

Salmonella dublin infection was observed in 11 cows in 10 herds. All but one case started with fever (in some cases above 41°C.), diarrhoea and a drop in milk production. Three animals died, one was slaughtered in emergency. Of the animals that recovered, six were carriers, the faeces being positive for more than 100 days.

The O-titre of the blood serum with boiled suspension varied from 1:40 to 1:320, the H-titre (formolized suspension) from 1:640 to 1:10,420.

The titres of four other carriers were: O-titre 1:20 to 1:40, H-titre negative to 1:40; in the latter cases *S. dublin* was isolated from the faeces only after the use of enrichment medium.—C. A. VAN DORSSEN.

GREEN, R. & MANKIKAR, D. S. (1950.) **An epidemic of typhoid fever due to ice-cream.**—*Bull Inst. Med. Res. Fed. Malaya.* No. 3 of 1949. pp. 18. 1628

An account of an outbreak of typhoid in a small town and the surrounding villages in Malaya traced to an ice-cream factory run as a family concern. Infection was traced to the owner; tests on his blood serum had given indefinite results and for a time he was allowed to proceed with production. The organism isolated from him was atypical.

—R. MACGREGOR.

COBURN, D. R. & MORRIS, J. A. (1949.) **The treatment of *Salmonella typhimurium* infection in ferrets.**—*Cornell Vet.* 39. 198-201. 1629

A continuation of earlier work [see *V.B.* 19. 324.].

Out of a herd of 77 ferrets cultures of *Salmonella typhi-murium* were obtained from the liver and spleen in two of the animals examined P.M. Rectal swabs indicated that five of the remaining ferrets were also infected and an attempt was made to halt the spread of infection by the use of autogenous bacterin, three doses, varying from 0·5 to 1·5 ml. according to the size of the animal, being given at five-day intervals. In an earlier study [Coburn, D. R. *et al.*, *V.B.* 13. 120] a chinchilla herd had been successfully immunized against *S. typhi-murium* in this way. In the studies now reported rectal swabs taken ten days after administration of the last dose yielded positive results in 40 of the 77 ferrets. Beneficial results were however obtained from the administration of sulphaphthalidine at the rate of approximately 0·25 g. per kg. body weight daily for four days. Only 12 animals (15·5%) yielded positive rectal swabs on the day following treatment, and rapid gains in weight and improvement in condition followed.

Mention is also made of a death rate of 10% among another ferret herd infected with *S. typhi-murium*; the infection was, however, clearly low-grade in character; in the two animals examined P.M. the main findings were generalized anaemia and varying gastro-intestinal lesions.—ALASTAIR N. WORDEN.

PLOUGH, H. H., YOUNG, H. N. & GRIMM, M. R. (1950.) **Penicillin-screened auxotrophic mutations in *Salmonella typhimurium* and their relation to X-ray dosage.**—*J. Bact.* 60.

145-157. [Authors' summary copied *verbatim.*] 1630

Suspensions of *S. typhimurium* have been exposed to X-radiation up to 57,000 roentgen units, then screened with penicillin on minimal medium containing essential salts and glucose according to the technique of Davis and Lederberg. Of the 457 strains isolated and tested, 234 proved to be auxotrophic mutant strains having a constant requirement for one or more food substances that the parent strain can synthesize for itself. The frequencies of these mutations are directly related to the X-ray dosage, suggesting that they are gene mutations similar to those found in higher organisms. Most of the mutant strains required one of the amino acids or one of the purines, but alternative and multiple requirements were found. The data indicate that at radiation dosages up to 35,000 r units a cysteine-requiring mutant is the most numerous, whereas above that level the mutant most frequently isolated requires histidine.

A test of the efficacy of the penicillin screening of mixtures of wild type and X-ray-induced mutations is given. The value of auxotrophic mutations for studies of the steps in bacterial synthetic processes is suggested.

MOORE, E. V. (1949.) **The New York State calfhood vaccination plan for the control of brucellosis.**—*23rd Ann. Rep. N.Y. St. Ass. Milk Sanit.* pp. 155-162. 1631

The test and slaughter method was unsuccessful as a means of controlling brucellosis in the cattle of New York State because of the large cattle population, the high incidence of infection and the extensive movement of stock. Calfhood vaccination was adopted as a means of building up clean vaccinated herds. Nearly two-thirds of all the calves raised annually in New York State are vaccinated with strain 19. In 1943, 14·2% of 145,057 cattle in 5,827 herds reacted to the blood test. Vaccination of all heifer calves was instituted and these herds were not tested again until 1948 when 4·8% of 126,814 cattle reacted.—L. M. JONES.

COLE, L. J. (1950.) **Purification of the bovine γ-globulin factor which suppresses variation in *Brucella abortus*.**—*J. Immunol.* **65.** 485-490. [Author's summary slightly modified.] 1632

A method is described for the chemical purification of the bovine γ-globulin factor which suppresses variation of *Brucella abortus*. The procedure involves heating serum at 63°C, precipitation with 0·5 saturated $(NH_4)_2SO_4$, fractional precipitation with 0·58 saturated NaCl at low pH, and treatment with chloroform. The purified factor exhibits typical protein reactions, and has a sedimentation pattern characteristic for a single protein.

When blood sera from Brucella-vaccinated cows are fractionated by the above procedure, no fractions with selective activity can be isolated, whereas normal serum yields active subfractions.

Bovine fraction II appears to be non-homogeneous with respect to selective activity.

MEYER, K. F. & EDDIE, B. (Undated. ?1949.) **The isolation of *Brucella suis* from the sputum.**—Reprinted from *Scritti Medici.* pp. 8. [Abst. from abst. in *Bull. Hyg., Lond.* **25.** 140. (1950). Signed: R. LOVELL.] 1633

Brucella suis was isolated from the blood and the sputum of a patient with acute brucellosis who had been working in a meat-packing plant. Pulmonary brucellosis had been recognized by early students of undulant fever though in later years pulmonary involvement has been thought to be due to secondary invasion. M. & E. considered that the bronchitis they reported was specific.

GAY, K. & DAMON, S. R. (1950.) **Use of the chick embryo for isolation of *Brucella*. Multiplication of the organism in the yolk sac and selection of the embryo age optimal for isolation from blood.**—*Publ. Hlth. Rep., Wash.* **65.** 1187-1194. [Authors' summary copied *verbatim.*] 1634

Relative growth curves for a strain of *Br. melitensis*, when injected in small numbers into the yolk sacs of 1- to 6-day-old chick embryos have been presented and the variations resulting from the inoculation of 1- and 2-day embryos noted. Growth curves obtained when this *melitensis* strain was inoculated into 5-day chick embryos and when a *suis* and an *abortus* strain were likewise injected were found to be comparable.

As a result of observations made during this study, the 5-day-old embryo has been selected as having reached that age which appears to offer optimum conditions for recovering *Brucella* from the blood stream because (1) it has given the most consistent results throughout these experiments, (2) it is an age easily adaptable to a routine procedure and (3) it affords a fairly long period for the enrichment of slow-growing strains before the yolk becomes dehydrated.

HERRELL, W. E. & BARBER, T. E. (1950.) **A new method for treatment of brucellosis.**—*J. Amer. med. Ass.* **133.** 519-524. [Authors' summary modified.] 1635

The authors gave aureomycin hydro-

chloride *per os* together with dihydrostreptomycin sulphate intramuscularly to 25 patients with culturally proved brucellosis, including infections by *Br. abortus, Br. melitensis* and *Br. suis*. In addition, 10 patients who were acutely ill and who had unmistakable evidence of brucellosis, although blood cultures were not positive were treated.

In these 35 cases there was one symptomatic relapse. The follow-up period extended from three to 19 months. Re-treatment has not been necessary in any case. The results were superior to those obtained by any previously available method.

WERNER, C. A. & KNIGHT, V. (1950.) **The suppressive effect of antimicrobial drugs on *Brucella melitensis* infection in mice.**—*J. Immunol.* **65.** 509-514. [Authors' summary slightly modified.] **1636**

The results of treatment of an experimental infection in mice due to *Brucella melitensis* with a number of antimicrobial drugs, alone and in combination, have been detailed. Among the single drugs tested, aureomycin and terramycin provided approximately equal suppression of the infection, whereas chloramphenicol, neomycin, and combined therapy with streptomycin and sulfadiazine did not signficantly influence the extent of the infection as compared to that seen in the untreated animals. The combination of streptomycin with aureomycin, chloramphenicol, or terramycin, however, definitely enhanced the antibrucellar effects of the latter drugs. A combination of aureomycin and streptomycin proved to be the most effective type of treatment in this study, although complete eradication of brucellae and suppression of the lesions of brucellosis was not achieved with any of the regimens tested.

While the results of treatment of experimental infections in animals cannot be transferred directly to the treatment of infections in man, this study provides additional evidence to support the further use of combinations of antibacterial drugs in human brucellosis.

SPINK, W. W. & ANDERSON, D. (1950.) **Brucella studies on bank blood in a general hospital. A. Agglutinins; B. Survival of Brucella.**—*J. Lab. clin. Med.* **35.** 440-445. [Authors' summary copied *verbatim*.] **1637**

Brucella agglutinins were demonstrated in the blood of 302 (18·55 per cent) of 1,627 apparently healthy donors of blood to a blood bank in a general hospital. Only 27 or 1·66 per cent had agglutinin titers of 1 to 160 or higher. There was some evidence that the donors with the high titers had had contact with the disease in the past.

Since even in an endemic area, only 1 or 2 per cent of a normal population has Brucella agglutinins in a significant titer, the agglutinin reaction is a valuable procedure in the detection of active disease.

When small numbers of viable Brucella of the three species are seeded to citrated whole blood, organisms may be cultured as long as six months after, if the blood is refrigerated at 4°C.

LEVINE, H. B. & WILSON, J. B. (1949.) **The identification of *Brucella abortus* strain 19 by dye bacteriostasis.**—*J. infect. Dis.* **84.** 10-14. [Authors' summary copied *verbatim*.] **1638**

The thionine-blue inhibition level of 31 cultures of *Brucella abortus* strain 19 was determined. All of these cultures were inhibited at the same level of 0·4 mg. of the dye per liter of Bacto-Tryptose agar. Sixty-six other strains of this species, of high and low virulence, were able to grow in the presence of at least 50% more dye in the medium than that level which was bacteriostatic for strain 19. It was found possible to prepare a medium containing a critical amount of thionine-blue which selectively inhibited strain 19 and thus accomplished its differentiation, by cultural procedures, from other strains of *Br. abortus*.

A quantitative method is presented which identifies strain 19 and which is reproducible at the same dye level.

RODE, L. J., OGLESBY, G. & SCHUHARDT, V. T. (1950.) **The cultivation of brucellae on chemically defined media.**—*J. Bact.* **60.** 661-668. [Authors' summary and conclusions slightly modified.] **1639**

A multiple amino acid synthetic medium has been formulated which yields sustained growth from small inocula of all 61 strains of brucella tested. These included 47 CO_2-requiring strains of *Brucella abortus*. None of the four previously described synthetic media for the cultivation of brucella yielded comparable growth of all of these strains. Marked differences were observed in the nutritional requirements of different brucella strains. Since these differences frequently are correlated with inoculum size, a decimal dilution inocula-testing technique is preferable to a single inoculum technique for brucella nutritional studies.

A significant toxicity relationship between sodium thiosulfate and cystine was noted in the synthetic medium used.

MANDIA, J. W. (1950.) **The migration of cultures of *Clostridium perfringens* in semisolid medium.**—*J. Bact.* **60.** 275-277. [Author's summary slightly modified.] **1640**

Three cultures of *Clostridium welchii*, nonmotile in fluid medium, showed in semisolid medium a behaviour similar to that observed for swarming bacteria on agar surfaces. Migration was performed under special conditions by groups of cells banding together and forming tiny motile colonies. A concept of bacterial motility based on spirillar motion of an organism and the presence of flagella is proposed.

BIANCHI, E. (1950.) Il botulismo dei bovini in Italia. **[Botulism in cattle in Italy.]**—*Clin. vet., Milano.* **73.** 120-122. **1641**

B. studied an outbreak of botulism among cattle in the province of Modena. The source of infection was stated to have been the carcass of a cat which had contaminated the hay fed to the cattle. A strain of *Clostridium botulinum* type D was isolated from the viscera of two cattle which died.—B. BALDELLI.

FARLEIGH, E. A. (1949.) **Botulism in wild birds.**—*Yearb. Inst. Insp. Stk., N.S.W.* 1949. pp. 101-102. **1642**

Numerous deaths occurred in a variety of species of birds living on a lake surrounded with decaying vegetable matter. Botulism was diagnosed by drenching g. pigs with the supernatant from incubation of gizzard contents in boiled sheep's heart medium for a week. Sick birds had been eaten by aborigines camped near the lake without ill effects.

—H. McL. GORDON.

PARRY, E. W. (1946.) **Prevalence of *Clostridium botulinum* in soils of Central New York State.**—*Food Res., Ill.* **11.** 203-209. [Abst. from abst. in *Bull. Hyg., Lond.* **25.** 194-195. (1950.)] **1643**

Two hundred and eighty-three samples of soil and dust from the five Central Counties of New York State were collected and examined between May and Sepember, 1944, at least three days after rainfall, from the surface layers of soil, to a depth not greater than six inches. The areas sampled included cultivated ground and virgin forest. Dust was collected from floors and ledges in barns and other buildings.

Of the cultivated soils (178) 26 yielded *Cl. botulinum* (21 type A, four B, one A and B). Of the unsown cultivated land 40 samples gave five positive results, four A, one B. Ground sown with maize, with maize and beans, with beans alone, and with potatoes, all yielded positive samples; but while ground sown with maize (12 out of 81 positive) and with potatoes (one out of eight positive) showed an incidence of infected samples about the same as that of unsown ground, the incidence in ground sown with beans appeared higher (six out of 26 positive). In all samples type A was more frequent than type B. In virgin forest, of 60 samples only three were positive, all type A. Of 45 barn dust samples four were positive, two A, one B, one A and B.

The *p*H of the soil samples varied from 4·25 to 8·6; the *p*H of *Cl. botulinum*-infected samples varied from 4·25 to 8.

STEGENGA, T. (1950.) Vibrio foetus en enzootische steriliteit. [***Vibrio fetus* and enzootic sterility.**]—*Inaug. Diss. Utrecht.* pp. 142. [English conclusions.] **1644**

Vibrio fetus infection of cattle is a venereal infection. Infected cows have a slight inflammation of the cervix and vagina, with swelling of the mucous membranes and increased mucus production. As a rule the cervix is open. After service most animals return to heat. Some months later they conceive again to an infected bull and are probably immune. There is no inflammation of the genital organs of infected bulls. The disease is transmitted by the semen (natural service or artificial insemination). *Vibrio fetus* was isolated from the semen of infected bulls. Of 125 samples of vaginal mucus from infected cows, 74 agglutinated *V. fetus;* samples from 39 uninfected cows were all negative. Of 46 bulls which had served cows that aborted as a result of *V. fetus* infection, 37 were suspected of transmitting infection. *V. fetus* was found in the vagina of two cows served by an infected bull which transmitted enzootic sterility.

The author concludes that *V. fetus* is probably the cause of so-called enzootic sterility.

—C. A. VAN DORSSEN.

SASLAW, S. & CAMPBELL, C. C. (1950.) **Studies on the stability of the histoplasmin collodion agglutination test.**—*J. Lab. clin. Med.* **35.** 780 - 785. [Authors' conclusions modified.] **1645**

Further experiences with the collodion agglutination test for *Histoplasma capsulatum* infection are discussed.

The relative stability of the collodion particles, the simplicity and repeatability of the test, and the economy of materials have been demonstrated. A comparison of three different lots of collodion varying in age from 3 weeks to 14 months yielded similar results in the presence of negative human and rabbit sera.

HAYES, A. F. & WRIGHT, G. M. (1949.) **Outbreak of calf diphtheria controlled with sulfamethazine.**—*J. Amer. vet. med. Ass.* 114. 80-82. **1646**

Of 4,095 calves and feeder cattle being shipped during the early winter of 1947, 2,785 were treated in an outbreak of calf diphtheria. Sulphamethazine was administered orally once daily for two days, the dosage varying from 0·75–1·5 gr. per lb. body weight. In addition feeding troughs and the walls of the treatment pens were disinfected daily with a saponified creosol solution.

Complete recovery ensued in 99% of the treated cases and no toxic reactions were observed.—K. B. SINCLAIR.

ANON. (1949.) **Nomenclature of fungi pathogenic to man and animals. Names recommended for use in Great Britain by the Medical Mycology Committee of the Medical Research Council.**—*Memor. Med. Res. Coun., Lond.* No. 23. pp. 12. **1647**

Medical mycology is hampered by the multiplicity of names given to fungi of medical importance. The 65 species of fungi pathogenic to man in the British Isles have been described in Britain under 150 names and in other countries under many more. For the sake of greater uniformity the Medical Research Council's Medical Mycology Committee has prepared a list of the names of the commoner British medical fungi, including the commoner mycoses affecting animals. In this list recommended names for fungi are in semi-bold italic type, rejected names in light italic; recommended disease names are in small capitals, rejected names in lower case roman type. An entry marked by an asterisk is a pathogen not indigenous to Britain. [The Committee hopes that journals will accept this nomenclature and adopt it. There has been wide acceptance by various bodies. The nomenclature here advocated will be used in future in the publications of the Commonwealth Bureau of Animal Health. —Ed. *V.B.*]—W. R. BETT.

SALVIN, S. B. (1950.) **Quantitative studies on the serologic relationships of fungi.**—*J. Immunol.* 65. 617-626. [Author's summary copied *verbatim.*] **1648**

A method was described for obtaining antisera against the following fungi: *Aspergillus fumigatus, Blastomyces dermatitidis,* six species of *Candida, Cryptococcus neoformans,* and *Histoplasma capsulatum.*

When six isolates of *C. neoformans* were compared as to their immunogenicity and their serological activity the differences were quantitative, not qualitative, as indicated by the complement-fixation and agglutination tests, and by quantitative antibody-nitrogen determinations.

As determined by complement-fixation studies, a strain of *C. stellatoidea* was found to cross-react more within the genus than any of the five other species studied, namely *C. albicans, C. pseudotropicalis, C. Guilliermondii, C. parapsilosis,* and *C. Krusei.*

The relationships of six species of fungi, namely, *A. fumigatus, B. dermatitidis, C. albicans, Candida stellatoidea, C. neoformans,* and *H. capsulatum,* were investigated by quantitative agglutinin-absorption studies.

I & II. DELAMATER, E. D., WIGGALL, R. H. & HAANES, M. (1950.) **Studies on the life cycle of spirochetes. III. The life cycle of the Nichols pathogenic *Treponema pallidum* in the rabbit testis as seen by phase contrast microscopy. IV. The life cycle of the Nichols pathogenic *Treponema pallidum* in the rabbit testis as visualized by means of stained smears.**—*J. exp. Med.* 92. 239-246; & 247-252. [Authors' summaries copied *verbatim.*] **1649**

I. A series of observations with the phase contrast microscope on the occurrence of a complex life cycle in the pathogenic *Treponema pallidum* as it occurs in the syphilitic rabbit testis has been presented and it seems likely from these observations that there are two means of vegetative reproduction, consisting of (1) tranverse division (the most important under usual conditions); and (2) the production of gemmae or buds which eventuate into unispirochetal cysts comparable to those described for saprophytic forms, within each of which single spirochetes develop and differentiate, and from which they subsequently emerge.

In addition preliminary evidence is presented which suggests that a more complex process is involved in which multispirochetal cysts develop following aggregation of two or more organisms. Within each of these larger cysts numerous organisms develop and subsequently emerge as tangled ropes. Following emergence, they subsequently undergo transverse division and gemmae formation and so reproduce vegetatively. Subsequent papers will elaborate upon these processes.

II. Further evidence for the occurrence of a complex life cycle in the pathogenic *Treponema pallidum* as visualized by means of stained preparations is presented.

BRUNNER, T. K. (1949.) **Canine leptospirosis.** —*N. Amer. Vet.* 30. 517-519. **1650**

A short review of the aetiology, patho-

genesis, symptomatology, and epidemiology of leptospiral infections in the dog is given. At the Hooper Foundation it was shown that infected hamsters still carry leptospira in the kidneys despite an apparently successful response to penicillin therapy. Further controlled experiments showed that the kidneys of such carrier animals could be freed from leptospira by the subsequent use of streptomycin. A similar observation on six dogs with leptospira in the urine (five with *L. canicola* and one with *L. icterohaemorrhagiae*) showed that intramuscular injection of 40 mg. streptomycin in oil and wax per kg. body weight on three successive days was sufficient to eliminate organisms from the urine and to make the culture of kidney material negative for leptospira. Dogs and hamsters inoculated with two doses of 0·25 ml. or 0·5 ml. each of a killed and concentrated *L. canicola* vaccine were given adequate protection against a massive challenge dose of the homologous strain but not against the heterologous strain. Further tests using a polyvalent vaccine were being carried out.

—T. W. F. Pay.

Seijffers, S. M. (1947.) Leptospirosis bij den Hond. [*Leptospira* **infection in a dog.**]—*Ned. -ind. Bl. Diergeneesk.* **54.** 109-110. **1651**

A description of leptospirosis in a dog (the first description from Macassar, Indonesia).

—C. A. van Dorssen.

Curbelo, A. & Marquez, V. (1949.) La espiroquetolisis y espiroquetoaglutinación en el diagnostico de las leptospirosis. [**Lysis and agglutination in the diagnosis of leptospirosis.**]—*Rev. Cubana Lab. Clin.* **3.** 51-62. [Abst. from abst. in *Bull. Hyg., Lond.* **24.** 866 (1949)] **1652**

Almost all this paper consists of a recapitulation of known facts about leptospira, and descriptions of established techniques for agglutination tests.

Of 62 suspected cases in Cuba, the authors have confirmed the diagnosis by agglutination tests in 37. The infecting organism in 19 cases was *Leptospira icterohaemorrhagiae;* in 17 was *L. canicola;* and in a single case was *L. grippotyphosa.*

Smith, P. F., Morton, H. E. & Leberman, P. R. (1950.) **Susceptibilites of pleuropneumonia-like organisms to some selective bacteriostatic agents.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 552-555. [Authors' summary slightly modified.] **1653**

Strikingly, the pleuro - pneumonia - like organisms do not behave either as gram-positive or gram-negative microorganisms in that they are not inhibited on solid medium by a 1:250,000 dilution of crystal violet which normally inhibits gram-positive microorganisms nor by a 1:50,000 dilution of potassium tellurite which normally inhibits gram-negative organisms. By being able to inhibit both gram-positive and gram-negative microorganisms the isolation of pleuro-pneumonia-like organisms from mixed cultures can be greatly facilitated. Generally, strains which have been cultivated on artificial media for some time are more resistant to the bacteriostatic substances than are the recently isolated strains.

Rudolph, W. (1948.) Wuchsstoffe und Antiwuchsstoffe. [**Bacterial growth factors.**]—pp. 108. Bern: Hans Huber. Sw. fr. 8.50. **1654**

In this monograph knowledge up to 1948 is reviewed of the mechanisms of the reactions of certain growth factors and antibiotics chiefly in regard to vitamins and antivitamins.

A general survey is given of known growth factors and their antagonists. The now well established *p*-amino benzoic—folic acid relationship with the sulphonamides is dealt with in the introductory chapter and is followed by discussions on the position of nicotinic acid and derivatives in relation to their antagonists; pantothenic acid with homologues and antagonists; B_6 group, pyridoxine and antagonists and biotin and antibiotin. Thiamine, lactoflavin, inositol, choline, ascorbic acid and their antagonists are discussed in a general chapter. The book concludes with an account of the role of specific amino acids in the relationship of growth factors and their antagonists.—R. Friedmann.

Brown, A. L. (1950.) **A survey of nuclease production by streptococci.**—*J. Bact.* **60.** 673-675. [Author's summary copied *verbatim.*] **1655**

A survey of 267 cultures, representing 24 groups or species, of the genus *Streptococcus* for the production of ribonuclease and desoxyribonuclease has been made. All group A streptococci tested produced both nucleases. About one quarter of the group B strains produced both nucleases; one strain produced only ribonuclease. Most strains of group C, and some strains of groups F, G, and L produce desoxyribonuclease. Among the other species, neither nuclease was found to be produced by any of the strains studied.

Slade, H. D. & Knox, G. A. (1950.) **Nutrition and the role of reducing agents in the forma-**

tion of streptolysin O by a group A hemolytic streptococcus. — *J. Bact.* **60.** 301-310. [Authors' summary copied *verbatim.*] **1656**

A defined medium that supports growth and the formation of high titers per total cell population of the oxygen-labile hemolysin, streptolysin O, by Richards' streptococcus (group A, type 3), has been developed. The minimum vitamin requirements for growth of this organism are supplied by nicotinic acid, pantothenate, and riboflavin. The addition of thiamine results in an increase in total growth and a fourfold increase in the streptolysin O formed per unit cell population. In this medium, growth is independent of the presence of added reducing agents. Streptolysin O is produced, however, only in the presence of glutathione, cysteine, sulfite, hydrosulfite, or thioglycolate. Each of these compounds shows an optimum concentration for lysin formation, above which the toxin titer drops sharply while growth remains optimum. The presence of ascorbic acid also permits streptolysin O formation. The lysin response per unit cell population is maintained at high level until the concentration of the acid inhibits growth.

These results suggest that an optimum reducing potential is required for maximum lysin production.

SCHUHARDT, V. T., RODE, L. J., OGLESBY, G. & LANKFORD, C. E. (1950.) **The development of peptone toxicity for brucellae with aging and the correlation of this toxicity with the probable oxidation of cystine.**—*J. Bact.* **60.** 655-660. [Authors' summary and conclusions copied *verbatim.*] **1657**

A bottle of tryptose was observed to develop toxicity for *Brucella abortus* 1257 during a period of two years from August, 1947, when it was nontoxic, to December, 1949, when it proved toxic to all but the largest inocula tested by the decmal dilution technique. The toxicity proved to be the same as that previously reported for other toxic lots of tryptose, and it did not develop as a result of gross exposure to laboratory environments. Cystine when heat-sterilized at pH 1·5 or when sterilized by filtration does not induce antibrucella toxicity in nontoxic tryptose. Also cystine sterilized by filtration will reverse the toxicity of toxic tryptose for *B. abortus*. Therefore we have concluded that cystine per se is not the antibrucella factor in toxic peptones. Since cystine when heat-sterilized at pH 7·0 in distilled water and added to nontoxic tryptose renders these peptones toxic for brucellae, we are inclined to conclude that a breakdown product of cystine (probably an oxidation product) is the antibrucella factor of the cystine-induced toxicity. Since norit will adsorb the antibrucella factor from tryptose that has been made toxic for *B. abortus* by heat sterilization with cystine at pH 7·0, we are inclined to beieve that this toxic breakdown product of cystine might be the antibrucella factor in toxic tryptose and other peptones.

GERHARDT, P., LEVINE, H. B. & WILSON, J. B. (1950.) **The oxidative dissimilation of amino acids and related compounds by *Brucella abortus*.**—*J. Bact.* **60.** 459-467. [Authors' summary copied *verbatim.*] **1658**

Of approximately 27 amino acids and related nitrogen compounds surveyed, only L-glutamic acid, L-asparagine, and D- or L-alanine were oxidized and deaminated at appreciable rates by strain 19 of *Brucella abortus*. Ammonia production from these compounds did not occur anaerobically to a significant extent. Among 14 related organic acids, L-malic, isocitric, and succinic acids were oxidized most rapidly, whereas acetic, lactic, *alpha*-ketoglutaric, pyruvic, oxalacetic, and fumaric acids were oxidized at successively lower rates.

The oxidative activity of the organism for glutamic acid and asparagine apparently was specific for the L-isomers; the D-forms not only were not metabolized but inhibited oxidation of the natural isomers. Both D- and L-alanine were oxidized. Very little change in the rate of oxidation occurred with varying concentrations of L-glutamic acid or L-asparagine, whereas half-maximal activity with DL-alanine was reached at a concentration of M/1,200. The optimal pH for the oxidation of L-glutamic acid or L-asparagine was approximately 6·8. Overall stoichiometric ratios for the dissimilation of L-glutamic acid and L-asparagine were determined for strain 19. A comparison was made of the ratios obtained with strain 19 and certain other strains with L-glutamic acid and the significance of the results was discussed.

LEVINE, S. & NOVAK, M. (1950.) **Studies on the metabolism of *Blastomyces dermatitidis*. I. The effect of various substances on respiration. II. The effect of pH on respiration.**—*J. Bact.* **60.** 333-340; & 341-347. [Absts. from authors' summaries.] **1659**

I. In studies on the yeast phase of *Blastomyces dermatitidis* the carbohydrates, alcohols and fatty acids which affected respiration were recorded. The influence of the structure of the molecule regarding the presence of a branched chain or double bond or the introduction of an OH group or Cl atom and the effect of salts were also discussed.

II. At pH 6–8 the optimal for endogenous respiration and glucose oxidation was obtained. In the presence of acetate, respiration appeared to be optimal at pH 6, but with fatty acids of higher molecular weight, there was an increase in stimulation with an increase in pH.

ABELSON, P. H. & ALDOUS, E. (1950.) **Ion antagonisms in microorganisms: interference of normal magnesium metabolism by nickel, cobalt, cadmium, zinc, and manganese.**—*J. Bact.* **60.** 401-413. [Authors' summary copied *verbatim.*] **1660**

The influence of magnesium on the toxicity of Ni, Co, Cd, Zn, and Mn has been demonstrated in *Escherichia coli*. The toxicity of these cations is markedly lowered in the presence of much magnesium. If magnesium is not present in the medium, these elements are toxic at very low levels. The elements in order of decreasing toxicity for *E. coli* are Ni, Co, Cd, Zn, Mn. The toxicity of Ni and Co can be similarly diminished by Mg in the case of the three other organisms tested: *Aerobacter aerogenes, Torulopsis utilis,* and *Aspergillus niger*. By the use of Ni^{57} and Co^{56} it has been found in all four organisms that the higher levels of magnesium diminish the amounts of nickel and cobalt bound by the cell.

WARREN, J. R. & GRAHAM, F. (1950.) **The effect of heparin on the growth of bacteria and yeasts.**—*J. Bact.* **60.** 171-174. [Authors' summary copied *verbatim.*] **1661**

The results of the experiments reported here indicate that heparin in a protein-free medium was bacteriostatic at concentrations of 100 ppm or greater. Heparin had no bactericidal effect at a concentration of 100,000 ppm; but, at this concentration, it did induce the development of a high percentage of mutants. Heparin failed to inhibit budding in yeasts at a concentration of 10,000 ppm.

See also absts. **1754** (nutrition and TB.); **1779** (*Cl. welchii* isolated from cases of bovine haemoglobinuria); **1801** (ergot); **1802** (*Aspergillus*); **1815** (streptococci, enterococci); **1872-1873** (culture of bacteria from milk); **1874** (bacteria and pleuropneumonia-like organisms); **1876** (a menstruum for drying bacteria and viruses); **1893** (report, South Australia); **1894** (book, bacteriology).

DISEASES CAUSED BY PROTOZOAN PARASITES

ARRIGHI, R. (1949.) Quelques cas de surra au Cambodge. [**Some cases of surra in Cambodia.**]—*Rev. Élev. Med. vét. Pays trop.* **3.** 135-137. **1662**

Twenty indigenous mares in apparent good health but in advanced pregnancy were housed temporarily on a farm, pending distribution to local breeders. They had no rise of temperature and blood smears were negative for trypanosomes, but during the subsequent three weeks two of the farm bulls died after a few hours' illness. No trypanosomes were found in the blood smears, and the only symptom was a slight gelatinous oedema of the throat. Two cows in full lactation, five months pregnant had similar oedema, but blood smears were also negative. They were given 3 g. naganol (suramin) in 10% solution intravenously, repeated in 12 days. They did not abort. The entire herd was similarly treated without ill effects. A stallion Arab half bred, and a mare ¾ Arab with signs of fever and numerous trypanosomes in the peripheral blood were treated with suramin and there was apparent recovery. The stallion was put to service and the mare mated, but three months later the mare aborted, and paralysis of the posterior regions appeared in both animals, and both died. Of the local mares, two developed symptoms, and recovered after suramin treatment, though they aborted. Ten others were treated with suramin with no ill effects.—R. MACGREGOR.

KRANEVELD, F. C. & DJAENOEDIN, R. (1949.) Enige proeven over de mogelijkheid van herstel van in het tweede stadium van surra verkerende paarden door behandeling met naganol en arsocoll. [**Naganol (suramin) and arsocoll treatment of horses infected with** *Trypanosoma evansi.*]—*Hemera Zoa.* **56.** 213-222. [English and French summaries.] **1663**

Of three horses each given 0·5 ml. of blood heavily infected with *Trypanosoma evansi* injected intraspinally, one left as a control died after nine days; one, given 3 g. suramin intravenously and 3 g. "arsocoll" [cf. tryparsamide] subcutaneously, immediately after it was infected, passed through a subacute illness, the trypanosomes remaining confined to the C.S.F. It died on the 64th day. The third was given similar treatment on the fifth day. It was cured.

LOFGREN, R. (1950.) **The structure of *Leishmania tropica* as revealed by phase and electron microscopy.**—*J. Bact.* **60.** 617-625. [Author's summary copied *verbatim.*] **1664**

The observations of the structural details of *Leishmania tropica* were made with the aid

of the phase and electron microscopes. Some of the organisms possessed long, laminated flagella made up of longitudinal filaments, whereas others had only short extensions of the axoneme, the dense, rodlike structure (usually double) in the anterior end of the cell. The blepharoplast appeared as a dense circle at the base of the axoneme. A membrane enclosed the blepharoplast, axoneme, and an unidentified ringlike structure. The only nuclei observed (except in stained films) were in the resting stage and contained one karyosome. The cell wall of the *Leishmania* cells possessed fine, longitudinal striations. Plasmoptysis [escape of protoplasm from the cell] of the organism caused the structures to spread apart, and in cells that had burst from the pressure, the longitudinal fibrils were seen to be connected by a thin, elastic membrane.

SANTI, A. (1949.) Sulfamidici e trichomonas mazzanti. [**Action of sulphonamides on *Trichomonas foetus*.**]—*Profilassi.* **22.** 15-19. [English and French summaries, abst. from English summary.] **1665**

S. studied "in vitro" the possible bacteriostatic action of sulphonamides on *Trichomonas foetus*.

He ascribed the disappearance of the reproductive phase of the cultures treated with large quantities of sulphonamides, more to the NaOH solution in which the antibiotic was dissolved than to the antibiotic itself.

COLE, B. A. (1950.) **The effects, *in vitro*, of certain antibiotics on the growth of *Trichomonas foetus*.**—*Proc. helminth. Soc. Wash.* **17.** 65-74. [Author's summary modified.] **1666**

Twelve antibiotics were screened against *Tr. foetus* for possible activity. Aureomycin was found to affect *Tr. foetus* in concentrations down to and including 25 μg/ml., rendering the culture sterile within 24 hours. Aureomycin does not affect the glucose consumption of *Tr. foetus*. Evidence of the existence of qualitatively different fractions of total metabolism is suggested. Impure aureomycin was shown to have an activity level higher than that for pure aureomycin. The possibility exists that an enhancement factor may be present in the impurities similar in action to that shown for penicillin.

Maltose, raffinose, sucrose and d-mannose were shown to be equally good as glucose for the culturing of *Tr. foetus*. The substitution of trehalose for glucose extended the life of the culture considerably but did not allow for equal peak populations with glucose. Bacitracin added to cultures of *Tr. foetus* caused the growth cycle to attain higher peaks and to last longer than the controls. Surface tension alone was eliminated as the cause for this effect. The evidence that bacitracin can be used by *Tr. foetus* as a metabolite is strong.

Tr. foetus was shown to be selectively sensitive to polymyxins A and B, and relatively resistant to polymyxin D, the difference being tenfold. It is suggested that *Tr. foetus* be used as a differential test organism for the identification of the polymyxins.

HORTON SMITH, C. (1949.) **Some factors influencing the origin and course of epidemics of coccidiosis in poultry.**—*Ann. N.Y. Acad. Sci.* **52.** 449-457. [Author's summary copied *verbatim*.] **1667**

Evidence is presented to show that the magnitude of an initial dose of sporulated oocysts administered to chickens in a closed community plays an important part in determining the extent of mortality amongst the survivors in the community when the oocysts derived from all the initial doses are administered to them as repeat doses of identical value.

Small differences exist between the mortality produced by large single doses of sporulated oocysts or a series of four daily doses, each of which was equivalent to one quarter of the value of the single dose. The development of immunity in the serially dosed chicks is probably a more prolonged process, as they suffer a higher mortality as a result of challenging doses.

Initial doses are immunizing to a greater or lesser degree according to whether their magnitude is great or small.

In nature the magnitude of the initial dose is conditioned by a complex of factors, the most important of which are temperature, available moisture, and the crowding, or othewise, of chickens constituting the community.

The magniture of initial doses or series of early doses and the conditions regulating them are discussed in their relationship to the production of coccidiosis in epidemic form.

MCGHEE, R. B. (1950.) **The ability of the avian malaria parasite, *Plasmodium lophurae*, to infect erythrocytes of distantly related species of animals.**—*Amer. J. Hyg.* **52.** 42-47. [Author's summary copied *verbatim*.] **1668**

The erythrocytes of 16 species of animals representing 3 classes were injected into the blood stream of chick embryos infected with the avian malaria parasite, *Plasmodium lophurae*. Parasites were observed in the erythrocytes of

the human being, rabbit, pig and mouse. The cells of the rabbit and pig disintegrated quickly and it was impossible to trace the asexual development for more than 10 hours. Although human cells retained their characteristic morphology for a greater length of time, they exhibited a rather high degree of resistance to infection. The erythrocytes of the white mouse were well preserved and readily subject to infection. There was a rough correlation between chemical composition and susceptibility of the erythrocyte in that only cells with a high potassium level were infected.

TRAGER, W. (1950.) **Studies on the extracellular cultivation of an intracellular parasite (avian malaria). I. Development of the organisms in erythrocyte extracts, and the favoring effect of adenosinetriphosphate.**—*J. exp. Med.* **92.** 349-366. [Author's summary copied *verbatim.*] **1669**

The erythocytic stages of *Plasmodium lophurae* were freed from their host red cells by specific hemolysis directly into a favorable medium containing an extract of duck erythrocytes. Extracellular survival and development of the parasite *in vitro* occurred in culture media consisting essentially of a very concentrated extract of duck red cells prepared in a special nutrient solution. Omission or dilution of the red cell extract resulted in rapid degeneration of the parasites. Their survival and development were favored by the presence in the erythrocyte extract of gelatin, yeast adenylic acid, and cozymase, and especially by the further addition of adenosinetriphosphate and sodium pyruvate. Under the best conditions yet tested, all the free parasites continued their development extracellularly during the first two days of cultivation. Merozoites formed by the extracellular segmentation of the free parasites originally present developed further into trophozoites. On the third day a majority of the free parasites were still of normal appearance, but by the fourth day more were degenerate, and very few normal parasites remained on the fifth day.

KONONOV, A. (1949.) [***Babesia* infections in horses with intensive helminth invasion.**]—*Veterinariya, Moscow.* **26.** No. 4. p. 20. **1670**

In spite of therapeutic measures, most of 386 horses with *Babesia* infection here reported on died. P.M. examination revealed heavy infestation with *Strongylus edentatus* in all, and with *Ascaris equorum* and *Anoplocephala* spp. in addition to others. K. suggested that the worms weakened the horses' resistance.

—F.A.A.

WICKHAM, N. & CARNE, H. R. (1950.) **Toxoplasmosis in domestic animals in Australia.**—*Aust. vet. J.* **26.** 1-3. **1671**

A brief review is given on toxoplasmosis in animals and man. The occurrence of the disease is reported in one sheep, one cat, three dogs and in a colony of domestic rabbits.

Clinically the disease in the sheep resembled a case of circling disease (*Erysipelothrix monocytogenes* infection). In brain sections perivascular cuffing, congestion and toxoplasms in pseudocysts were observed.

In a paralysed cat toxoplasms were found in the brain and spinal cord without any signs of inflammatory reaction.

In the dogs a variety of lesions were found P.M., the liver, and in two cases the lungs, being most affected. The liver was fatty with toxoplasms in the liver cells and in the bile duct epithelium.

Cases were generally similar to those previously described by other workers.—R. BAIN.

SPLITTER, E. J. (1950.) *Eperythrozoon suis* **n.sp. and** *Eperythrozoon parvum* **n. sp., two new blood parasites of swine.**—*Science III.* 513-516. **1672**

Eperythrozoon suis was found associated with "ictero-anaemia" or "anaplasmosis-like disease" in swine. Animal experiments have established the organism as a new species. Another species, *E. parvum,* was identified, but observed only under experimental conditions.

E. suis is generally observed as an extracellular ring structure about 0·8μ in diameter. At the height of parasitaemia other forms are present and discoid forms 1μ–2·5μ in diameter may also be found. The organisms usually lie upon the erythrocytes and may be sufficiently numerous to cover their whole surface.

E. parvum is observed principally as small coccus forms and occasional ring structure (diameter 0·5μ) and has a tendency to accumulate in large numbers upon individual erythrocytes even when very rare in the whole blood smear. This species was shown to be non-pathogenic for splenectomized pigs although a parasitaemia developed, but subsequent infection with *E. suis* gave rise to severe symptoms and death in some cases.

The two species were infective for neither a calf nor a lamb and were thus differentiated from *E. wenyoni* and *E. ovis* which in turn

were shown to be incapable of infecting pigs. Mice were not susceptible to the swine species which were therefore considered distinct from *E. coccoides* and *E. varians*.—L. P. JOYNER.

See also abstr. 1724 (parasites of poultry); 1895 (book, tropical diseases).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

CAMPION, R. L. (1950.) Receptividad del Chaetophractus villosus (Peludo) al virus de la fiebre aftosa. **[Susceptibility of *Chaetophractus villosus* (armadillo) to foot and mouth disease.]**—*Gac. vet., B. Aires.* **12.** 3-14. **1673**

Tests of the susceptibility of the armadillo to experimental infection by various routes with F. & M. disease virus using g. pig and bovine strains of virus were described.

A typical vesicular lesion was developed in one animal 48 hours after plantar pad inoculation of g. pig virus and a generalized lesion was present in the uninoculated pad 24 hours later. The epithelium and the blood were infective for g. pigs. The convalescent serum possessed marked neutralizing properties when tested comparatively with sera from normal armadillos. Four passages were made with the infective blood intralingually and by the intraplantar route. All the animals became infected and had local and generalized lesions. In one experiment subcutaneous inoculation did not produce lesions, but the virus was recovered from the blood 72 hours after the injection. Infection by contact was possible by keeping armadillos in cages or in pens and two were also infected by ingestion of infective tissues. It appears that apart from the lesions, there are no other manifestations of the disease; except in one case, the body temperature remained within the wide range that seems to be normal for this species.

The armadillo appeared to be less susceptible to bovine strains of virus: six out of nine were infected by plantar pad inoculation; one out of three by contact with cattle and one out of six by contact with pigs; by ingestion only one out of ten became infected. It was also possible to demonstrate that the disease can be transmitted to the pig by contact with an infected armadillo. In the armadillo re-infections occur with different types of virus.

The possible role played by this wild animal in the epidemiology of the disease in Argentina is considered insignificant at the moment, because the infection is mainly spread by the susceptible domestic animals.

—M. NORAMBUENA.

LUKASHOV, I. I. & NIKITIN, M. G. (1949.) **[An outbreak of Aujeszky's disease in pigs, sheep and a calf.]**—*Veterinariya, Moscow.* **26.** No. 12. pp. 15-17. **1674**

A note on a small outbreak of Aujeszky's disease in pigs which spread to a sheep and to a calf.—F.A.A.

CONTE, H. S. V., FERRAZ, C. C. & FALCÃO, H. R. (1947.) Estudo de algumas características do vírus rábico de passagem L.C.P.V. em comparação com a estirpe Pasteur do I. P. de Paris. **[Comparison of a local strain of rabies virus with the Pasteur Institute fixed virus.]**—*Repos. Lab. Pat. vet., Lisboa.* **6.** 261-288. [English, French and German summaries. Abst. from summaries.] **1675**

Experiments were carried out to compare a local strain of rabbit-passaged rabies virus with the Pasteur fixed virus. The paralytic form of rabies was produced in every case by the local strain; it was found to be more affected by dilution than the Pasteur virus and less sensitive to the action of glycerin. It was less resistant to phenol, formaldehyde and chloroform.

In some instances the Pasteur fixed virus failed to produce the disease in rabbits, but the local strain always proved pathogenic when injected intra-ocularly. [The relative antigenic value of the two strains was not established.]

—E.V.L.

OTTEN, L. (1947.) **Investigations into rabies. II.**—*Antonie van Leeuwenhoek J. Microbiol. serol.* **13.** 101-127. [In English.] **1676**

Antirabic treatment in man in Bandoeng with live and formol-killed monkey brain vaccine, carried out over a period of 25 years is discussed. When administered during the first week after the bite no failures occurred when either live or formolized vaccines were used. The killed vaccine consisted of a 10% suspension of monkey brain in a 1·5 per thousand solution of formalin, kept for five days at 37°C. Prior to administration it was diluted to 2%. The 2% suspension lost effectiveness fairly rapidly when stored at room temperature, but the 10% suspension of the formolized brain stored at 5°C. was quite stable. When centrifuged, virulence and antigenicity of the supernatant fluid of the 10% solution was markedly lower than the deposit or the non-centrifuged vaccine.

Of 155 rabbits immunized with 20 mg.

(given in three doses of 3, 7 and 10 mg.) of formolized vaccine, 15 died after subsequent intramuscular infection with street virus. Of 60 non-immunized controls 58 died after experimental infection. Whether the doses were given at daily or at weekly intervals had no bearing on the results.—E.G.

CAMPILLO, C. (1950.) Aislamiento del virus en tres casos de rabia humana. Reporte clinico. **[Isolation of rabies virus from three human cases. Clinical report.]**—*Medicina.* **30.** 1-6. [English summary.] [Abst. in *Trop. Dis. Bull.* **47.** [No. 7.] 620-621. (1950.), copied *verbatim.* Signed: H. HAROLD SCOTT.] **1677**

Rabies is endemic in the Mexican Republic. During the 10 years ending 1947 there has been an average of 41 cases annually and in 1949 Ortiz MARIOTTE reported that the curve of incidence tended to rise in spite of the use of the vaccine by Semple's method. The author reports details of three cases, two adults, men aged 52 and 57, and a boy aged 6 years; all had been bitten by rabid dogs in the street and all died after the disease had run a typical course. By inoculation of animals, mice and cuis [small rodents of the hamster type] with brain tissue the virus was conveyed to them. In one case the saliva was proved to be infectious in the following way. The saliva was obtained by suction with a pipette, then diluted with normal saline, centrifuged to throw down the grosser impurities and the supernatant was treated with crystallized sodium penicillin, 500 units per cc., and used for inoculation, intracerebrally and subcutaneously. The results in mice and cuis were negative but a rabbit developed the disease 24 days later and died 24 hours after paralysis had set in. It is noteworthy that the saliva was infective subcutaneously for the rabbit, but not for mice inoculated intracerebrally.

VITTOZ, R. (1950.) Prophylaxie de la rage en Indochine et en Extrême-Orient. **[Prevention of rabies in Indo-China and the Far East.]**—*Bull. Off. internat. Epiz.* **34.** 37-96. **1678**

Prophylactic measures in the Far East present many problems which are detailed as zoological, economic, physiological and circumstantial factors. Police sanitary measures adopted in various countries are detailed and there is a critical analysis of the regulations. Medical prophylactic measures are similarly studied. The weakness and wide variety of methods in use are discussed, particularly in view of the virulence of the virus, the size of the canine population, and the numbers of stray and semi-wild dogs. Veterinary services are often faced with insurmountable difficulties of a religious nature. A plea is made for the adoption of fundamental police measures with local variations as required. It is considered that the best vaccines are either the phenolized types or the formolized rubber latex vaccine in use in Indo-China. Numerous statistics are given relating to various countries in the Far East, particularly Japan.—G. V. LAUGIER.

DOWNIE, A. W. & MACDONALD, A. (1950.) **A study of the pox viruses by complement fixation and inhibition of complement-fixation methods.**—*J. Path. Bact.* **62.** 389-401. [Authors' summary slightly modified.] **1679**

Immune sera prepared in fowls against variola, alastrim, vaccinia, cowpox and ectromelia viruses fail to fix complement in the presence of soluble antigens from these viruses. That the sera do combine specifically with these antigens is shown by the fact that when these two reagents are mixed in suitable proportions no fixation of complement occurs on the subsequent addition of known fixing mammalian antisera. By the use of suitable concentrations of mammalian antisera and virus antigens the antibody content of the immune fowl sera can be titrated by the "inhibition-of-complement-fixation" method. This indirect technique revealed the greater specificity of the immune fowl sera and has emphasised certain serological differences suggested by direct complement-fixation tests using mammalian antisera.

Serological differences could not be detected among four strains of variola and one strain of alastrim virus. The vaccinia strains examined were similar in serological behaviour to the variola strains.

There was considerable serological cross-reactivity between the antigens of cowpox and ectromelia viruses and those of the variola-alastrim-vaccinia group. The cowpox and ectromelia viruses are, however, more closely related to each other than is either of them to the variola and vaccinia viruses. The results suggest that the vaccinia strains at present in use in Great Britain have been derived from variola virus rather than from Jenner's cowpox strains.

STOKER, M. G. P. & MARMION, B. P. (1950.) **A comparison of the conglutinating complement absorption test and the haemolytic complement fixation test in the serological diagnosis of influenza.**—*Brit. J. exp. Path.* **31.** 332-337. [Authors' summary copied *verbatim.*] **1680**

The conglutinating complement absorption

test and haemolytic complement fixation test were compared for detection of human influenza virus A antibodies. Acute and convalescent sera from eight definite and four doubtful cases of influenza A infection, and single specimens from six normal individuals were examined by both tests with influenza virus A and B soluble antigens. The results showed that the conglutinating complement absorption test was usually the more sensitive both in the detection of antibody rise during infection and of final titres in convalescence. This increased sensitivity, however, was variable and in the present state of knowledge was not sufficiently great to justify replacement of the orthodox haemolytic complement fixation test by the conglutinating complement absorption test in routine laboratory diagnosis.

SUGG, J. Y. (1950.) **The relation of the concentration of unadapted and adapted influenza virus in the mouse lung to the death or survival of the infected host.**—*J. Bact.* **60.** 489-497. [Author's summary copied *verbatim.*] **1681**

When either the unadapted or adapted line of the Cam strain of influenza virus was inoculated intranasally into mice, the death or survival of the infected animal seemed to depend upon the concentration of virus attained in the lungs rather than upon the amount of multiplication of the agent in that tissue. The two lines did not differ greatly in respect to the concentration that was associated with death, but the adapted line possessed the capacity to multiply to a higher concentration in the mouse lung than the unadapted line. The latter finding seems to explain the difference in the mouse virulence of the two viruses.

The results as a whole suggest that the concentration of influenza virus in the lungs which is associated with the death of mice can be attained in either one of two ways: when a large amount is inoculated the quantity introduced may, by itself, present a lethal concentration, or when lesser amounts are inoculated the lethal concentration may be attained as a result of virus multiplication. In the former case the amount of virus required to kill the animal is apparently less than in the latter case.

SCHLESINGER, R. W. (1950.) **Incomplete growth cycle of influenza virus in mouse brain.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 541-548. [Author's summary copied *verbatim.*] **1682**

Mouse brain, previously considered as insusceptible to infection with non-neurotropic strains of influenza virus, has been found to support a single cycle of viral reproduction in which hemagglutinin and complement-fixing antigen increase without concomitant rise in infective titer. Rather, the infective titer decreases progressively in mouse brain. The newly formed, incomplete virus is non-infectious, but is produced only if the intracerebral inoculum contains fully infectious virus. The yield of incomplete virus is proportional to the amount of infectious virus inoculated. In mouse brain, as in the allantoic membrane, the constant period preceding a rise in hemagglutinin titer is longer for the Lee than for the PR8 strain. These findings appear to have significance in relation to the "toxicity" of non-neurotropic influenza viruses and to their ability to interfere with unrelated neurotropic viruses, and to the problem of viral adaptation to experimental hosts.

FAZEKAS DE ST. GROTH, S. & DONNELLEY, M. (1950.) **Studies in experimental immunology of influenza. III. The antibody response.**—*Aust. J. exp. Biol. med. Sci.* **28.** 45-60. [Author's summary copied *verbatim.*] **1683**

The antibody response of mice receiving graded doses of influenza virus (live or inactivated by formaldehyde or heat) was studied. Sera and bronchial washings were titraed daily for three weeks following the administration of virus by the nasal, peritoneal or subcutaneous route. The ratio of antibody contained in the circulation and at the site of virtual infection is expressed by the *"antibody distributon coefficient"*: 100 × bronchial antibody/serum antibody.

After experimental infection (nasal instillation of live virus) anti-haemagglutinin is first detectable on the seventh day. Maximum antibody levels are reached round the twelfth day, and at the end of the third week there is already a noticeable drop in titres. The serological response is practically uniform in all survivors from infections with 0·1 to 100,000 ID_{50}. The amount of antibody free in the bronchi is on the average 5 p.c. of that contained in the serum. (Distribution coefficient = $5{\cdot}1 \pm 0{\cdot}41$.)

Three days after peritoneal and five days after subcutaneous administration of live virus anti-haemagglutinin is detectable in the circulation, but only after a lag of 4–5 days in the respiratory tract. Maximum titres are reached between the tenth and twelfth days. The serological response is proportional to the immunizing dose; to produce identical serum titres approximately 10^5–10^6 times more virus is needed by these routes than when given nasally. Only 1/250 of the antibody is free in the respiratory tract (distribution coefficient = $0{\cdot}4 \pm 0{\cdot}07$); the

distribution is independent of the absolute amount of antibody present.

After nasal vaccination with inactivated virus, anti-haemagglutinin appears in the circulation on the 5–6th days, and reaches its maximum before the end of the second week. Roughly ten times more killed virus is needed to produce identical titres by this route than by the peritoneal. The antibody distribution coefficients are high: $5{\cdot}2 \pm 0{\cdot}33$ for formolized and $4{\cdot}5 \pm 0{\cdot}17$ for heated vaccines.

Inactivated virus given peritoneally elicits the same response as the same amount of live virus given by the same route. The distribution coefficient is $0{\cdot}4 \pm 0{\cdot}06$ for both types of killed vaccine.

Complement-fixing antibody ("anti-S30") is detectable only after experimental infection of mice, the time curves and the distribution coefficients showing the same trend as the anti-haemagglutinin of the respective groups. No complement-fixing antibody is produced after peritoneal or subcutaneous administration of live virus, or after vaccination with killed virus by any of the three routes.

Quantitative and qualitative aspects of the immunization process are discussed in the light of these findings, and the importance of the route of entry of the immunizing antigen is emphasized. The conclusion is reached that the serum antibody level in itself is insufficient to describe the serological state of an individual, as it gives no information in regard to the concentration of antibody at the site of possible infection.

RAMPAS, J. & GALLIA, F. (1949.) Isolace viru encefalitidy z klíšťat Ixodes ricinus. **[Isolation of an encephalitis virus from the tick.]** —*Čas. Lék. čes.* **88.** 1179-1180. [English summary.] [Abst. in *Bull. Hyg., Lond.* **25.** 325. (1950), copied *verbatim*. Signed: D. J. BAUER.] **1684**

The authors have previously described cases of encephalitis occurring in Czechoslovakia [see Gallia, F. *et al. V.B.* **20.** 436] from which they isolated a virus related to louping-ill and Russian spring-summer encephalitis. The disease could have been transmitted by ticks. A sample of 30 *Ixodes ricinus* collected in an epidemic area in the spring of 1949 was prepared and inoculated intraperitoneally into 21 day-old mice. A virus was isolated and transferred through several intracerebral passages. Virus was also isolated from a second pool of 50 *Ixodes ricinus*, which was inoculated subcutaneously into three-day-old mice. In later passages the incubation period became stabilized at four days. The virus was neutralized to high titre by a convalescent serum from the previously reported epidemic. The possibility that ticks may act as a reservoir of infection is briefly discussed.

THOMAS, L., PATERSON, P. Y. & SMITHWICK, B. (1950.) **Acute disseminated encephalomyelitis following immunization with homologous brain extracts. I. Studies on the role of a circulating antibody in the production of the condition in dogs.**—*J. exp. Med.* **92.** 133-151. [Authors' summary copied *verbatim*.] **1685**

A severe demyelinating condition characterized by ataxia and paralysis, in some instances leading to death, was produced in thirty-five of a total of fifty-five dogs following immunization with homologous brain tissue combined with Freund's adjuvants. In more than 30 per cent of instances paralysis did not occur until immunization was continued for 6 or more months. Only eight dogs became paralyzed after a single injection of antigen. The condition appeared between 6 and 15 days after the last injection in all animals, irrespective of the total number of injections or the duration of immunization.

An antibody which reacted in complement fixation tests with aqueous and alcoholic extracts of homologous brain tissue was demonstrable in the majority of immunized dogs, whether or not the animals became paralyzed. It appeared during or after the 3rd week of immunization, and its occurrence or titer could not be correlated with the incidence of the encephalomyelitis. In general, there were fewer dogs with demonstrable antibody in the paralyzed group than in the non-paralyzed group.

A flocculation reaction with alcohol extracts of homologous brain was demonstrated in the serum of immunized dogs. The antigen and antibody involved were apparently identical with those responsible for the complement fixation reactions.

The brain tissue component which reacted as antigen in the complement fixation test was present in adult brain from several mammalian species, and peripheral nerve. It was not present in the brain of newborn dogs nor in other unrelated organs. It was demonstrable in brain tissue which had been allowed to autolyze, or treated with 10 per cent formalin. It was not impaired by boiling, or by acid hydrolysis, and was contained in the unsaponifiable fraction of brain lipids. It was separable from cholesterol by digitonin precipitation of the latter.

Immunization of dogs with the unsaponifiable fraction of homologous brain, in adjuvants, caused the appearance of antibrain

antibody similar to that in animals injected with whole brain. Encephalomyelitis was not observed during a 2 month period of immunization with this fraction.

In guinea pigs, an injection of the unsaponifiable fraction of brain, in adjuvants, was followed by fatal meningoencephalitis, but the identity of the state with that caused by whole brain antigens was not established.

LUMSDEN, C. E., KABAT, E. A., WOLF, A. & BEZER, A. E. (1950.) **Studies on acute disseminated encephalomyelitis produced experimentally in Rhesus monkeys. V. Complement-fixing antibodies.**—*J. exp. Med.* **92.** 253-270. [Authors' summary copied *verbatim.*] **1686**

Animals injected with emulsions of monkey brain with adjuvants show a complex pattern of antibody response as determined by complement fixation tests.

Organ-specific complement-fixing antibodies to constituents of brain tissue may be formed which fix complement with brain tissues of various animal species but fail to react with other organs or with rabbit placenta.

Antibodies may be formed to some constituent of brain other than nervous tissue. It would seem that these can be detected by the strong complement fixation given with rabbit placenta.

Sera from individual animals may contain antibodies to the brain or placenta constituents, to both, or to neither. Occasional individual sera show unique patterns of antibody response as determined with various additional antigens such as fetal brain, posterior pituitary, or peripheral nerves.

No evidence of any etiological relationship between the development of encephalomyelitis and the complement-fixing antibodies to brain demonstrable in the sera could be found. The complement-fixing antibody to the placental constituent was unrelated to the encephalomyelitis.

CHEEVER, F. S., DANIELS, J. B. & HERSEY, E. F. (1950.) **A viral agent isolated from a case of "non-paralytic poliomyelitis" and pathogenic for suckling mice: its possible relation to the Coxsackie group of viruses.**—*J. exp. Med.* **92.** 153-167. [Authors' summary slightly modified.] **1687**

A viral agent, Powers, causing myocarditis, adipositis, pancreatitis, hepatitis, and encephalomyelitis but not myositis in mice 1 to 2 days old was isolated from the stool of a patient in whom the clinical diagnosis was "non-paralytic poliomyelitis". Serological evidence linking the virus to the clinical disease observed was clear only in the case of "non-paralytic poliomyelitis" from which it was isolated. The possible relation of this agent to the Coxsackie group of viruses is discussed. No serological relationship with the Connecticut 5, Ohio R, and High Point strains was demonstrated.

A second virus, Matulaitis, was isolated from a concurrent case of "non-paralytic poliomyelitis" in the same area. Lesions produced in infant mice by the two agents have certain differences.

PAPPENHEIMER, A. M., DANIELS, J. B., CHEEVER, F. S. & WELLER, T. H. (1950.) **Lesions caused in suckling mice by certain viruses isolated from cases of so called non-paralytic poliomyelitis and of pleurodynia.**—*J. exp. Med.* **92.** 169-189. [Authors' summary and addendum copied *verbatim.*] **1688**

A study has been made of the lesions produced in suckling mice by the following viruses: Powers, Matulaitis, DeMole, Kine, McCarthy, Conn. 5, Ohio R, High Point, WS No. 4, EMC, and Col. SK. Pathologic alterations have been found in myocardium, lungs, liver, pancreas, thymus, brain and spinal cord, adipose tissue, and skeletal muscles. A comparison of the lesions produced by the individual strains has disclosed certain differential features which are discussed in detail. Within the group of so called Coxsackie viruses, myositis has not proved to be a constant finding, and it may occur in suckling mice infected with other types of virus.

Addendum.—Since this manuscript was submitted for publication, Dalldorf [(1950) *Bull. New York Acad. Med.* **26.** 329] has described the pathological changes produced in infant mice by two groups of Coxsackie viruses. The lesions found by him in group A infections showed only a generalized destruction of striated muscles. The lesions observed with group B infections included focal areas of myositis, and changes in the central nervous system and adipose tissue comparable to those herein described.

LAKTIONOV, A. M. (1947.) **[Infectious equine encephalomyelitis.]**—*Veterinariya, Moscow.* 24. No. 5. pp. 8-11. **1689**

This is a brief symposium of 12 papers. The titles of two of them are: "Virus activity in the cerebrospinal fluid" and "Allergic theory of the pathogenesis of equine encephalomyelitis". Other papers deal with the history of the recent epidemics, vaccination results, treatment with various substances such as turpen-

tine, sodium chloride, chloralide (a compound of chloral), formalin, ichthyol with rivanol (2-ethoxy-6:9-diamino-acridine-hydrochloride); the use of glycerin and sodium carbonate as preservatives for specimens sent for diagnosis; the use of swine fever serum on horses affected with this disease, and the resting of infected pastures during spring and summer to allow infection to die out, before using them for the grazing of horses.—F.A.A.

ZOTOV, A. P. (1949.) **[Complement-fixation test in type determination of equine infectious encephalomyelitis.]** — *Veterinariya, Moscow.* **26.** No. 8. p. 57. **1690**

The immunological properties of 13 Russian strains of equine encephalomyelitis virus and their relation to six strains of other neurotropic viruses (two of American equine encephalomyelitis, one of fixed rabies, one of Borna disease and two of Aujeszky's disease) were determined by means of complement-fixation tests. Preparation of antigens from brain tissue, by repeated freezing and thawing from −192°C. to +37°C., and of hyperimmune rabbit sera are described, one group comprising 11 of the 13 strains, reacted specifically with the sera of the same group but negatively with the other six neurotropic viruses. The other two strains failed to react specifically and may, therefore, belong to a different group.

Tests were also made for the presence of antibodies in sera of 13 convalescent and 131 clinically healthy horses, the latter, however, coming from districts infected with equine encephalomyelitis. The antibodies in some convalescents' sera indicated affinity with antigens of the first group, which may suggest their identity with virus strains prevalent in their respective districts. But in three cases the sera contained no antibodies nine months after recovery and this suggests that post-infection immunity may be short-lived. The presence, in the blood of clinically healthy horses, of antibodies similar to the antigens of the first group were considered to indicate that many unsuspected horses have had a latent form of equine encephalomyelitis.—F.A.A.

STENIUS, P. I. (1948.) Något om frekvensen av acidofila cytoplasmatiska inklusioners förekomst och dessas morfologiska förhållanden i det centrala nervsystemet hos nöt med elakartad katarralfeber. **[Acid-fast inclusion bodies in nerve cells in bovine malignant catarrh.]**—*Suom. Eläinlääkaril.* **54.** 175-180. **1691**

Acidophile cytoplasmatic inclusions were reported to have been found in the neurons of the motor vagoglossopharyngeal nucleus in 50% of spontaneous cases of bovine malignant catarrh. The inclusions measured 300–500$\mu\mu$ and are apparently related to an intracellular virus activity. Inclusions of this type had not as yet been demonstrated in other nuclei in the central nervous system or in the epithelial cells of the mucous membranes of the digestive and respiratory systems.

—H. WESTERMARCK.

MONTGOMERIE, R. F. (1950.) **The occurrence of Hepatitis contagiosa canis (Rubarth) in Great Britain.**—*Vet. Rec.* **62.** 114. **1692**

Between May 1946 and June 1948 no cases of Hepatitis contagiosa canis were recognized in material sent to the Wellcome Research Laboratories. In 1949 there were 39 cases from a wide variety of counties in England. The features of the disease as seen by M. and his colleagues agree with those described by Rubarth: affecting young puppies, often just weaned; lethargy, coma, convulsions and death; enlarged and haemorrhagic lymph nodes; mottled liver with intralobular haemorrhage and a fibrinous deposit on the surface of the organ; and the characteristic histopathological lesions described by Rubarth. Protracted cases which might be confused with distemper or "hard pad disease" were not encountered.

It appears that the disease is widely distributed in Britain and practitioners are invited to submit entire carcasses or fixed portions of liver for diagnosis.—E. G. WHITE.

FLORENT, A. & LEUNEN, J. (1949.) L'hépatite contagieuse du chien (*Hepatitis contagiosa canis*). Son existence en Belgique. Sa symptomatologie et son diagnostic. Essais de transmission expérimentale. **[Canine infectious hepatitis in Belgium.]**—*Ann. Méd. vét.* **93.** 225-241. **1693**

The authors reported the existence of infectious canine hepatitis (Hepatitis contagiosa canis) in Belgium. They described an outbreak in a kennel of Chows, where five out of six puppies and two out of five bitches died, and gave details of nine other isolated cases. The symptomatology, pathology and epidemiology described are practically identical with Rubarth's classical description. Histopathological and serological means together with transmission experiments were used to confirm the diagnosis.

Successful experimental infections were carried out with young puppies, using liver extract from natural cases by the intraperitoneal route and in one case by simple contact. By means of the complement-fixation test it was

possible to demonstrate that, although the serum of young puppies was always negative for specific antibodies, 60% of all adult dog blood samples examined contained such antibodies. Experimentally infected animals were found to develop specific complement-fixing bodies 10–15 days after the thermal response. Attempts to demonstrate the presence of virus in the blood of infected dogs by means of the complement-fixation test was successful only once, and in that case the virus was later demonstrated in the urine.—T. W. F. Pay.

Keep, J. M., Steel, J. D. & Whittem, J. H. (1950.) **A clinical, pathological and experimental study of a meningitic syndrome in dogs.**—*Aust. vet. J.* **26.** 330-337. [Authors' summary copied *verbatim*.] **1694**

Two cases of acute clinical meningitis which occurred in a small greyhound kennel are described.

The etiological agent was isolated by animal transmission experiments, the results of which are described in detail and discussed. It is concluded that the causative agent was a virus of the "hard-pad distemper" group. Using the criteria of MacIntyre *et al.* [*V.B.* **19.** 401], it was found impossible to decide whether the hard-pad virus or the distemper virus was the infective agent.

Zuydam, D. M. (1950.) Klinische verschijnselen bij een uitbraak van Pseudovogelpest in Nederland. [**Newcastle disease in the Netherlands.**]—*Tijdschr. Diergeneesk.* **75.** 341-342. **1695**

The clinical symptoms of Newcastle disease in fowls in the Netherlands are: dyspnoea, a drop in egg production, yellow faeces, anorexia, depression and thirst. In the outbreak described, 46 out of 102 fowls died in six days and the survivors were killed.

—C. A. van Dorssen.

Zuydam, D. M. (1949.) Pseudovogelpest (Newacstle disease) bij in Nederland geïmporteerde fazanten. [**Newcastle disease in imported pheasants.**]—*Tijdschr. Diergeneesk.* **74.** 481-486. **1696**

In the Laboratories of the State Serum Institute at Rotterdam, Newcastle disease virus was isolated from two pheasants recently imported from Calcutta. The outbreak was described by Jansen, J. *et al.* [*V.B.* **20.** 206.].

—C. A. van Dorssen.

Kraneveld, F. C. & Mansjoer, M. (1950.) Twee mogelijkheden tot besmetting van pluimveebedrijven met pseudovogelpest. [**Newcastle disease. Wild birds as source of infection.**] — *Hemera Zoa.* **57.** 166-170. [English and French summaries. Abst. from English summary.] **1697**

The faeces of house sparrows and striped ground-doves, *Geopelia striata striata* which had ingested food contaminated by faeces of fowls with Newcastle disease proved to be infective to healthy fowls for 3–5 days. This infective period agrees with data previously obtained in respect of house sparrows, spotted doves, *Streptopelia chinensis tigrina* and Java sparrows, *Padda oryzivora oryzivora*.

A dose of 5 ml. of water drawn from the open drains which are customary in Java, to which 5 mg. of faeces from infected birds had been added proved to be infective to fowls for at least five days.

Poultry farms may therefore become infected through the faeces of visiting or passing wild birds, and also through infected water from the open drains.

Burnet, F. M. & Lind, P. E. (1950.) **Haemolysis by Newcastle disease virus. II. General character of haemolytic action.**—*Aust. J. exp. Biol. med. Sci.* **28.** 129-150. [Authors' summary copied *verbatim*.] **1698**

Newcastle disease virus is haemolytic for several species of mammalian and avian erythrocytes. Allantoic fluid virus is only weakly haemolytic and is relatively more haemolytic when diluted than when used undiluted. Virus precipitated from allantoic fluid with methanol in the cold (MPV) and dialysed free from methanol is much more actively haemolytic than the original. Haemolytic activity is lost by heating at 54°C. for 30 minutes a treatment which leaves intact the haemagglutinating and inhibitor destroying activities of the virus. At temperatures below 24°C. (human cells) or 28°C. (fowl cells) the speed of haemolysis falls very rapidly and at 18°C. or below it is inappreciable.

With an actively haemolytic virus and a high virus/cell ratio haemolysis may be complete but in general haemolysis proceeds only to a certain level and then virtually ceases. The final level is determined by the relative concentrations of virus and cells, the type of virus and the degree to which cell receptors have been modified by previous treatment.

Cells from which receptors are removed by the action of RDE [receptor destroying enzyme] or other viruses are completely resistant to haemolysis, provided the receptor destruction has proceeded to a point corresponding to loss of agglutinability by strain MEL. The final level of haemolysis can be reduced to any desired value by appropriate preliminary treatment of

the cells with NDV under conditions which do not produce haemolysis.

The initiation of haemolysis can take place only at a temperature above a critical point but once initiated haemolysis will proceed at a lower temperature. The speed with which the initiating reaction occurs is the main factor determining the shape of the haemolytic curve.

Calcium has an inhibiting effect on haemolysis much more evident with fowl cells than with human cells and with allantoic fluid virus than with MPV. Haemolysis is inhibited by immune serum to titres corresponding closely to the anti-haemagglutinating titre of the serum. Virus firmly attached to stromata (saponin lysed fowl cells) can haemolyse added normal red cells.

The phenomena are discussed on a basis of the hypothesis that there are several types of active patch on the virus particle surface.

HANSON, R. P., WINSLOW, N. S., BRANDLY, C. A. & UPTON, E. (1950.) **The antiviral activity of Newcastle disease immune sera.**—*J. Bact.* **60.** 557-560. [Authors' summary slightly modified.] **1699**

Hemagglutination inhibition and serum-neutralizing activity against Newcastle disease virus generally appeared simultaneously following exposure of fowls to living or formalin-killed Newcastle disease virus. In general, the peak titers of hemagglutination inhibition and serum-neutralization were not reached simultaneously or maintained equally. The serum-neutralizing titers in fowls studied persisted much longer than the hemagglutination inhibition titers.

γ-Globulin fractions of immune bovine serum were obtained that contained high levels of serum-neutralizing activity and that lacked hemagglutination inhibition activity. It appears possible that hemagglutination inhibition and serum-neutralizing activities may be the function of separate antibodies.

KRANEVELD, F. C. & NASOETION, A. (1948.) Immunisatie tegen pseudovogelpest. I. Proeven met vaccin No. 45. II. Enige proeven met modificaties van entstoff Nr 45 vaccins Nrs 45/a en 45b). III. Prophylactische proeven met enige verschillend gemodificeerde vaccins Nrs 48 en 49. [**Immunization against Newcastle disease. I. Tests with vaccine No. 45. II. Tests with modifications of vaccine No. 45 (vaccines Nos. 45/a and 45/b). III. Tests with modified vaccines Nos. 48 and 49.**]—*Ned. ind. Bl. Diergeneesk.* **55.** 255-343; 345-351 & 353-410. [English summaries. Abst. from summaries.] **1700**

I. The yatren (the sodium salt of 8-hydroxy-7-iodoquinoline-5-sulphonic-acid) vaccine No. 45 (prepared from brain tissue of fowls with Newcastle disease) was tested in Indonesia on imported and on indigenous breeds of fowls. Two inoculations, each of 5 ml. at a week's interval, produced marked immunity against oral infection. The maximum degree of immunity was reached after 3–4 weeks and was maintained for at least five months; vaccination did not reduce egg production. Indigenous fowls responded more favourably than imported breeds. The vaccine was successfully stored for a trial period of 22 weeks.

II. Limited experiments with vaccine No. 45/a, for which the virus was cultivated in chick embryos, were unsatisfactory from a practical point of view but indicated the possibility of preparing an active vaccine in this way.

III. Iodine, potassium iodide and chinosol (a quinoline derivative) were used in the preparation of vaccines Nos. 49/a and 48/a; in doses of 5 ml. both vaccines were as active as vaccine No. 45.

A single injection of 5 ml. of vaccine No. 49/a produced immunity lasting 12 months against contact infection in 50–70% of indigenous fowls, but its keeping quality was unsatisfactory.

Vaccine No. 49/c containing twice the quantity of chemical substances and five times the amount of virus used in vaccine 49/a, in doses of 1 ml. immunized 67–87% of indigenous fowls against severe oral infection, for a controlled period of 12 months; the keeping properties of the vaccine were not clearly established.

Vaccine No. 48/b contained the same amount of virus as 49/c and chinosol in addition to the iodine and potassium iodide. It had better keeping properties and was active up to five months.—E.V.L.

DONKER-VOET, J. & KURJANA, R. (1950.) Newcastle disease (Pseudovogelpest) Praktijkresultaten. [**Practical results in Newcastle disease immunization.**]—*Hemera Zoa.* **57.** 428-434. [English, French and German summaries. Abst. from English summary.] **1701**

A report on the vaccination of 18,929 fowls with Newcastle disease virus vaccine. The number of cases of paresis and paralysis and the rate of mortality were insignificant. Among pure-bred fowls the incidence of disease and mortality was very low (2%). No cases were reported among indigenous fowls.

Egg production declined considerably among pure-bred fowls. It is therefore inadvis-

able to vaccinate laying hens. No reliable data could be obtained regarding the effect of vaccination on native hens, but no complaints had been received of detrimental results.

DOLL, E. R., WALLACE, M. E. & MCCOLLUM, W. H. (1950.) **Reinfection of chickens vaccinated by the intranasal method with live B1 Newcastle disease virus.**—*Amer. J. Vet. Res.* **11.** 437-440. [Authors' summary slightly modified.] **1702**

Chickens hatched from susceptible hens and vaccinated at 3 weeks of age by intranasal inoculation with B1 strain of Newcastle disease virus (NDV) were reinfected with the GB strain of NDV at fifty-one days following vaccination. Reinfection was accomplished by intranasal, direct contact, and airborne contact exposure.

The anamnestic response of hemagglutination-inhibition titers following intranasal challenge exposure of B1-vaccinated chickens which have lost the demonstrable hemagglutination-inhibition antibody resulting from vaccination is indicative of active reinfection with NDV. The reinfection was subclinical in nature and appeared to be limited to the respiratory tract. The reinfection was not serious as a cause of morbidity and mortailty, but may have implications in the epizootiology of Newcastle disease.

HENLE, W., HARRIS, S., HENLE, G., HARRIS, T. N., DRAKE, M. E., MANGOLD, F. & STOKES, J. (1950.) **Studies on the agent of infectious hepatitis. I. Propagation of the agent in tissue culture and in the embryonated hen's egg.**—*J. exp. Med.* **92.** 271-281. [Authors' summary copied *verbatim*.] **1703**

Two viral agents have been procured from patients with infectious hepatitis in two widely separated outbreaks of the disease by transfer of acute stage serum and stool filtrates to and passage in tissue cutures of rabbit liver cells in roller tubes and minced chick embryos in Simms-Sanders medium followed by passage in the amniotic cavity of the chick. Cultures of both agents, designated the Akiba and NL strains of virus, induced mild hepatitis without jaundice in the majority of volunteers tested after an incubation period of from 9 to 38 days. Although these agents have not been identified definitelv as the virus of infectious hepatitis, the available evidence, as discussed, in compatible with the suggestion that such they are.

DRAKE, M. E., KITTS, A. W., BLANCHARD, M. C., FARQUHAR, J. D., STOKES, J., JR. & HENLE, W. (1950.) **Studies on the agent of infectious hepatitis. II. The disease produced in human volunteers by the agent cultivated in tissue culture or embryonated hen's eggs.**—*J. exp. Med.* **92.** 283-297. [Authors' summary copied *verbatim*.] **1704**

The successful cultivation of the virus of infectious hepatitis in chick embryo tissue culture and in the amniotic cavity of the embryonated hen's egg is supported by a comparison of the disease induced in volunteers by the cultivated virus with hepatitis without jaundice resulting from experimental infection with natural infectious hepatitis virus. Both types of viral preparations produced illnesses in comparable percentages of volunteers (83 and 75 per cent, respectively) after similar average periods of incubation (24·4 and 23·4 days, respectively) and of similar average duration (28·3 and 27·6 days, respectively). The disease could be divided in both groups of patients into a primary stage, followed after a short interval of relative well being by the secondary stage. The illnesses in both instances were characterized by anorexia, nausea, vomiting, enlarged, tender livers and abnormal liver function tests, and frequently temperature elevations. They differed in that jaundice was observed in 31 per cent of the cases resulting from infection with natural virus but not in any patients infected with the cultivated virus.

ANDREWES, C. H., LOVELOCK, J. E. & SOMMERVILLE, T. (1951.) **An experiment on the transmission of colds.**—*Lancet.* **260.** 25-27. [Authors' summary copied *verbatim*.] **1705**

A group of 12 persons after complete isolation for ten weeks did not show greatly enhanced susceptibility to natural acquisition of common-cold infection. A cold virus had been artificially propagated in normal persons by intranasal inoculation and in addition had apparently survived one amniotic passage in fertile hens' eggs; this virus still induced colds in 15 out of 16 persons on intranasal inoculation but it failed to be transmitted by natural contact. In contrast a natural "wild" cold did spread to 3 of 8 subjects.

LITTLEJOHN, A. I. (1950.) **Tick-borne fever as a cause of abortion in sheep.**—*Vet. Rec.* **62.** 577-579. **1706**

Three outbreaks of abortion in sheep are described which were attributed to tick-borne fever. In each case there was a history of movement during late pregnancy from tick-free to tick-infested land, the incidence of abortion was about 30% and the mortality among aborting ewes was high. The organisms of tick-borne fever were demonstrated by microscopic and/or biological examination in the blood of

aborting ewes, but were absent from the blood of other members of the flock that had not been on tick-infested pastures.—L. M. Jones.

I. Klopstock, A. (1949.) **[The problem of Q-fever in Israel.]**—*Refuah Vet.* **6.** 85-89. [English summary p. 120.] 1707

II. Komarov, A. & Goldsmith, L. (1949.) **Isolation of the causative agent of Q fever, *C. burneti* in Israel.**—*Ibid.* 54-56. [English summary p. 83.] 1708

III. Komarov, A. & Goldsmith, L. (1949.) **[Identification of the causative agent of Q fever, *Coxiella burneti*, in Israel.]**—Ibid. 89-90. [English summary p. 119. Absts. from English summaries.] 1709

I. Q fever was recently diagnosed for the first time in Israel. K. discussed the epidemiology of the disease and stressed the necessity for medical and veterinary co-operation in making a survey of the incidence and dealing with the problem.

II. Inoculation of citrated blood from a suspected human case of Q fever into g. pigs produced a febrile reaction. The condition was passed in series in g. pigs by inoculation of spleen suspensions. On serial inoculation in the yolk sacs of chick embryos, rickettsiae were detected in the third passage. The disease was reproduced in g. pigs by the injection of yolk sac material.

III. A g. pig surviving from the above experiments and a control g. pig were inoculated with egg yolk material very rich in the *Rickettsia burneti* of the strain isolated in Israel. The control g. pig died but the one which had been previously infected, survived. Serum from the surviving g. pig, taken 14 days after the above immunity test was subjected to the complement-fixation test against antigens made from the 'Nine Mile' and the 'Henzerlinch' strains of *R. burneti*. The titre of the serum in both instances was above 1:2,000.—A. Foggie.

Meiklejohn, G. & Lennette, E. H. (1950.) **Q fever in California. I. Observations on vaccination of human beings.**—*Amer. J. Hyg.* **52.** 54-64. [Authors' summary copied *verbatim*.] 1710

Q fever vaccines prepared from yolk sacs of chick embryo infected with the Henzerling strain were effective in producing an increase in complement fixing antibody in the great majority of laboratory personnel. Antibody titers tended to drop within 4 to 5 months, suggesting that booster injections should be given at intervals shorter than 4 months. Severe local reactions followed booster injections of the more potent of the 2 vaccines. No clinical cases of Q fever occurred among 50 vaccinated personnel. Inapparent infection may have occurred in 6 individuals.

The single clinical case of Q fever occurred in an unvaccinated serologist 3 weeks after arrival in the laboratory. Recovery following administration of aureomycin was prompt. Evidence is presented which suggests that handling blood from human patients and infected animals may entail considerable risk of infection.

Liebermeister, K. & Zehender, E. (1950.) Zur Morphologie und systematischen Stellung des Q-Fieber-Erregers. **[The morphology and biological relationships of the organisms of Q fever.]**—*Klin. Wschr.* **28.** 276-278. [Abst. in *Trop. Dis. Bull.* **47.** 730. (1950.), copied *verbatim*. Signed: John W. D. Megaw.] 1711

The special feature of this paper is the set of three excellent photographs of *Rickettsia burneti* taken with the electron microscope and reproduced at magnifications of 8,000 to 17,000. Two of the photographs, taken after shadow-casting the organisms with chromium, are specially striking.

The photographs strongly support the authors' conclusions that the organisms are rightly classified as rickettsiae and that they can rightly be called *Rickettsia burneti*.

The name Q fever is considered unhappy by the authors who state that it has even been disparagingly called *"Kuh-Fieber"* [cow-fever] but they have to admit that it has the advantage of being internationally understood. No reference is made to the proposal, widely accepted in the U.S.A., to call the organism *Coxiella burneti*.

Yamafuji, K. & Ueda, A. (1950.) Ueber den Einfluss des Hydroxylamins auf die Erzeugung des Denguefiebervirus in der Maus. **[The influence of hydroxylamine on the Dengue fever virus in the mouse.]**—*Enzymologia.* **14.** 107-111. [In German. English summary slightly modified.] 1712

The liability of mice to contract Dengue fever is increased by the injection of hydroxylamine. Acceleration of the multiplication of virus molecules by the action of this amine takes place, therefore, in the body of a mammal.

Labaw, L. W., Mosley, V. M. & Wyckoff, R. W. G. (1950). **Radioactive studies of the phosphorus metabolism of T2r+ bacteriophage with *Escherichia coli*.**—*J. Bact.* **60.** 511-524. [Authors' summary copied *verbatim*.] 1713

The synthesis in nutrient broth of nucleic acids in *Escherichia coli* infected with the T2r+ bacteriophage has been followed with radioactive phosphorus. When the *E. coli* were irradiated with ultraviolet light before infection, the phosphorus utilized was considerably greater than in the controls of irradiated *E. coli* without T2. The final phosphorus content of ultracentrifugates of the lysate shows good correlation with the final number of T2 plaque-forming units and leads to a phosphorus content per infectious unit that agrees with previously published chemical analyses. The amount of phosphorus in the crude lysates recoverable in the filtered lysates is such as to show that nearly all the nucleic acid synthesized by the infected bacteria is incorporated in mature bacteriophage.

The amount of DNA [desoxyribose nucleic acid] synthesized by actively growing *E. coli* during one generation lifetime apparently marks an upper limit to the amount of this acid that can become available for bacteriophage production in ultraviolet-inactivated *E. coli*. The data from detailed study of early stages further indicate that the maximum rate of synthesis of DNA in systems involving the infected *E. coli* is approximately the same as in normal actively growing bacteria cultured under similar conditions.

Infection of *E. coli* with ultraviolet-irradiated T2 reduced the phosphorus uptake to an extent that showed that the synthesis of both ribose and desoxyribose nucleic acids had been suppressed. Infection of irradiated *E. coli* with irradiated T2 gave a phosphorus uptake which was less than that for irradiated *E. coli*.

See also absts. **1728** (*Culex tarsalis* in relation to Western equine encephalomyelitis); **1783** (unknown virus disease in fowls in Holland); **1876** (a menstruum for drying bacteria and viruses); **1893** (report, South Australia).

IMMUNITY

CORKILL, N. L. (1950.) **Diet protein in relation to disturbed host-parasite balance.**—*Ann. trop. Med. Parasit.* **44.** 212-221. [Author's summary copied *verbatim*.] **1714**

In certain infections in which phases of latency exist, failure of host-parasite balance may follow infection with a different pathogen, tissue trauma, physiological stress or protein subnutrition. Common to all these conditions is breakdown of the body protein, which presumably includes antibody gamma-globulin, which in any case has a half-life of only about a fortnight. It is suggested that, in such circumstances, there is inhibition of resynthesis of gamma-globulin as antibody, owing to insufficiencies of dispersable amino-acids in the body's protein reserve, or of indispensable amino-acids in the dietary intake, or of both. Lysine appears to be of special interest in this connection, since it is quantitatively the most important indispensable amino-acid in gamma-globulin and is comparatively lacking from the carbohydrate diet-staples of many large populations in warm climates affected by mass infections. It is suggested that the abnormal low-albumin high-globulin pattern of plasma-protein response in infection, trauma and subnutrition is purposive, in that, since in all these conditions there is increased danger of infection (old or new) overpowering the existing antibody defence, economy in dietary lysine (of which albumin contains about twice as much as globulin) enables a greater amount of globulin antibody to be formed from an intake which is assumed to remain constant.

It is not suggested that the reasons for the failure of host-parasite balance are necessarily as simple as the above hypothesis might seem to indicate, nor that the part played by lysine is as important as might appear.

ANON. (1946.) **Inanition immunity.**—*J. Amer. med. Ass.* **132.** 81-82. [Summary copied *verbatim*.] **1715**

In 1944 Stoerk and his associates of the Department of Pathology, Columbia University, showed that in rats partial pyridoxine (vitamin B_6) deficiency produces atrophy of the thymus and other lymphoid tissue without a parallel reduction in body weight. Dougherty and his associates of Yale subsequently confirmed an earlier belief that lymphocytes are the main source of specific antibodies. If so, a diet deficient in pyridoxine should lead to reduced specific antibody formation.

Stoerk divided young albino rats into three groups of litter mates. The animals of group 1 were weaned on a diet deficient in pyridoxine but otherwise adequate. Restricted amounts of the complete diet were fed to the rats in group 2 in order to duplicate the growth retardation in group 1. A second control group received the complete diet ad libitum. During the first five weeks on these diets the rats in group 3, the adequately fed control group, increased in body weight from an average of 46·9 Gm. to 160

Gm. The two restricted groups increased but half that rate. In the pyridoxine deficient group the average terminal thymus weight was 0·047 Gm. In the two control groups the average was 0·288 Gm., or six times as much. At the end of five weeks all three groups were immunized against washed sheep erythrocytes. Each animal received three intraperitoneal injections of 0·5 cc. of 5 per cent washed red blood cells. Five days after the last injection the animals were exsanguinated. The resulting serums were titrated individually for hemagglutinins and hemolysins. Of the 9 pyridoxine deficient rats, 6 showed no measurable agglutinins or hemolysins. The other 3 had low titers. The average composite (hemagglutinin and hemolysin) titer of these 9 rats was 1:7. Of the 16 animals of the two control groups, 13 had comparatively high titers (e.g. 1:320). The average composite titer for the two groups was 1:150. This is twenty times the average titer of the pyridoxine deficient group. A 95 per cent reduction in specific antibody formation is thus produced by vitamin B_6 deficiency.

Of even greater clinical interest is the contrast between the two control groups. In group 3, fed the complete diet ad libitum, the average composite antibody titer was 1:52. In group 2, fed restricted amounts of the same well balanced diet, the average composite titer was 1:238. There was thus a five-fold increase in specific antibody formation associated with decreased caloric intake. More detailed studies in this form of inanition immunity are now in progress.

McKerns, K. W. & Denstedt, O. F. (1950.) **The free-cell phenomenon in isohaemagglutination.**—*Canad. J. Res.* Sect. E. 28. 152-168. [Authors' abst. copied *verbatim*.] 1716

An hypothesis is presented to account for the invariable persistence of unagglutinated red blood cells in agglutinated samples even when potent isoagglutinating serum is used It is postulated that the cells which remain free represent the few which become completely saturated with the agglutinin during the sensitization phase of the reaction. These cells, which amount to only a fraction of a per cent of the total originally present in the sample, are incapable of reacting with one another but can undergo agglutination with fresh cells of the same blood type thus indicating that they are morphologically normal. Evidence is presented in support of the hypothesis. The free-cell count is reproducible provided the agglutinating serum is potent and the conditions of the experiment are standardized. The influence of various factors on the free-cell count, and the usefulness of the count for following changes in the avidity of isoagglutinating serum with time, are discussed.

Rice, C. E. (1950.) **The interchangeability of the complement components of different species. III. In conglutination.**—*J. Immunol.* 65. 499-507. [Author's summary copied *verbatim*.] 1717

A comparative study of the conglutinative activity for sheep red cells treated with heated cow serum has been made with 12 mammalian and two avian complements. The conglutinative technic was used in the determination of the C′1 and C′2 titers of each and of the degree of species interchangeability of these respective heat-labile components.

Of the mammalian complements, horse, swine, and cat were actively conglutinative; some samples of human, cow, and deer sera were weakly so. Fresh sera of guinea pig, rabbit, hamster, rat, and chicken, although hemolytic were not conglutinative, while sheep and mouse complements were neither. Turkey complements behaved in an irregular manner.

The "midpiece" (C′1) fraction of cow complement showed the widest degree of interchangeability, producing a conglutinating mixture with "endpiece" (C′2) fractions of most of the other species. In mixtures of C′1 of cow with C′2 of guinea pig, man, hamster, and horse, hemolysis as well as conglutination was observed.

Horse C′2 induced conglutination in mixture with C′1 of all mammalian complements except those of rat and mouse, both of which were extremely anticomplementary; it occasionally failed to react with guinea pig C′1. Swine C′2 was also broadly interactive.

It is suggested that a species incompatibility of test reagents is a possibility to be considered before concluding from data obtained with one test system only, that a particular complement component is absent from the fresh serum of any given species.

Roza, M. (1950.) Over de houdbaarheid van malleine en tuberculine B. **[Keeping properties of mallein and tuberculin B.]**—*Hemera Zoa.* 57. 94-105. [English and French summaries. Abst. from summaries.] 1718

In tests of the activity of old mallein and tuberculin, kept for 1–12½ years under the ordinary conditions of veterinary practice in Indonesia, R. confirmed that both products remained active for a period of 12–13 years. Prolonged storage of mallein and tuberculin caused a reduction in the number of non-specific

reactions The addition of phenol to mallein as a preservative, however, decreased its activity.

ZARAFONETIS, C. J. D. & OSTER, H. L. (1950.) **Heterophile agglutination variability of erythrocytes from different sheep.**—*J. Lab. clin. Med.* **36.** 283-287. 1719

The purpose of this work was to establish one of the principal sources of error in the Paul-Bunnell test, *i.e.*, variations in the agglutinability of erythrocytes from different sheep. Twenty-four sera were obtained from patients exhibiting the symptoms and blood picture of infectious mononucleosis, each serum being tested with erythrocytes from each of 24 sheep. Wide variations in agglutination titre were observed. Erythrocytes obtained periodically from the same sheep did not give constant results. Prolonged storage of erythrocytes resulted in variation of their agglutinability. The implications of these finding were discussed.—L. M. MARKSON.

DAVIDSON, I. & STERN, K. (1950.) **Further studies on natural antisheep agglutinins in mice of inbred strains.**—*Cancer Res.* **10.** 571-576. [Authors' summary copied *verbatim.*] 1720

Natural antisheep agglutinins have been studied thus far in strains C57 black, C3H, dba Marsh-albino, B alb C, Akm, C57 brown and I.

The antisheep agglutinin in mice is not of the Forssman type. Antigen of Forssman type was found in normal and neoplastic tissues of C3H, dba, and C57 black mice, independent of strain. The antigen was not present in the erythrocytes.

No relationship was noted between presence and titer of natural antisheep agglutinins and the incidence of spontaneous tumors in the strains studied.

The incidence and titer of antisheep agglutinin in C57 black mice showed a progressive rise from the fifth to the twelfth weeks of life.

HILL, A. G. S., DEANE, H. W. & COONS, A. H. (1950.) **Localization of antigen in tissue cells. V. Capsular polysaccharide of Friedländer bacillus, type B, in the mouse.**—*J. exp. Med.* **92.** 35-44. [Authors' summary copied *verbatim.*] 1721

The fate of the capsular polysaccharide of Friedländer B bacillus in the mouse after its intravenous administration was studied by means of homologous antibody labelled with fluorescein. The results indicate that this acid polysaccharide, like pneumococcal polysaccharide, types II and III, was rapidly taken up by phagocytic cells throughout the body, where it persisted in decreasing concentration for more than 33 days. It was widely distributed in the capillary endothelium and on collagenous fibres in all organs. It made a transient appearance in or on lymphocytes in the spleen and lymph nodes. It was found in the hepatic epithelium and in the bile; in the juxtaglomerular segment of the distal renal tubule and in an occasional cast in the lumens of collecting tubules; in the epithelium of some uterine glands; and in cells in the steroid-secreting tissues of the ovary, suprarenal cortex, and perhaps of the testis.

In joints the synovial membranes contained large amounts of antigen, and some also penetrated into cartilage cells adjacent to the joint cavity. Osteoblasts and a few osteocytes also took up the polysaccharide.

When administered by inhalation, the polysaccharide was found in high concentration in the pulmonary macrophages but could not be found constantly in other lung elements.

MARTIN, S. P. & KERBY, G. P. (1950.) **The splanchnic removal in rabbits during fatal bacteriemias of the circulating organisms and of superimposed non-pathogenic bacteria.**—*J. exp. Med.* **92.** 45-49. [Authors' summary copied *verbatim.*] 1722

By a method of hepatic venous catheterization previously described [*V.B.* **20.** 238], comparative data have been obtained concerning the removal of pneumococci from the splanchnic circulating blood of the intact rabbit in bacteriemias secondary to a dermal infection and in bacteriemias induced by a continuous infusion of organisms into the blood stream. The average splanchnic removal in secondary pneumococcal bacteriemias was 8 ± 14 per cent (S.D.)., in induced bacteriemias 9 ± 15 per cent (S.D.).

Similar data were obtained in induced *M. aureus* bacteriemias superimposed upon pneumococcal bacteriemias secondary to dermal infection. The average splanchnic removal of *M. aureus* in normal rabbits was 62 ± 20 per cent (S.D.) The splanchnic removal of *M. aureus* in rabbits with a simultaneous pneumococcal bacteriemia of infection was of the same order of magniture as in normal rabbits.

The efficiency of the mechanism of splanchnic removal for a given organism is an important factor in the establishment and maintenance of a bacteriemia. Present evidence indicates that the maintenance of a bacteriemia requires a constant introduction into the blood stream of organisms from some source.

Pneumococci do not acquire a resistance

to removal from the splanchnic circulating blood during the course of fatal infection in rabbits.

No final exhaustion of the mechanism of splanchnic removal can be demonstrated in fatal pneumococcal bacteriemias in rabbits.

See also absts. **1587** (Dubos-Middlebrook haemagglutination reaction using purified tuberculin); **1601** (irradiated vaccines against TB.); **1602** (immunization of cattle against TB.); **1603-1607** (BCG); **1613** (summer mastitis); **1615** (avirulent swine erysipelas vaccine); **1616** (Traub's vaccine); **1631** (calfhood vaccination against brucellosis); **1632** (brucellosis); **1637** (*Brucella* agglutination tests of blood from donors); **1648** (serological relationship of fungi); **1650** and **1652** (canine leptospirosis); **1675, 1676** and **1678** (rabies); **1679** (complement-fixation inhibition of pox viruses); **1680** and **1683** (influenza); **1685-1686** (antibodies in encephalomyelitis); **1690** (complement-fixation test in equine encephalomyelitis); **1693** (Rubarth's disease); **1699-1702** (Newcastle disease); **1710** (Q fever); **1896** (book, allergy).

PARASITES IN RELATION TO DISEASE [GENERAL]

SLUITER, C. P. (1948.) De dierlijke parasieten van den mensch. **[The animal parasites of man.]**—pp. viii+441. Amsterdam: Scheltema & Holmema's Boekhandel en Uitgevers Maatschappij N.V. 5th Edit. F. 16.-. 1723

The protozoan, helminth and arthropod parasites of man are described and illustrated with numerous line drawings and three coloured plates. The life cycles and geographical distribution of the various species are described.

Parasites of purely veterinary importance are not included.—M.C.

CLAPHAM, P. A. (1950.) **On sterilizing land against poultry parasites.**—*J. Helminth.* **24.** 137-144. [Author's summary copied *verbatim.*] 1724

Tests have been made with methyl bromide to investigate its efficiency in destroying infective stages of some helminth and protozoan parasites of poultry and game birds. It appears to have an immediate strong lethal action against ova of the common nematode parasites and against oocysts of *Eimeria tenella*. Its efficiency against ova of *Choanotaenia infundibulum* was not definitely proved. When used in the field, it penetrates soil to a depth of several inches, and in so doing destroys both ova and many invertebrates known to be vectors of poultry parasites. Land which has been treated remained quite free from parasitic infection for many months but gradually became re-infested. Wild birds were probably the agents for they carry ova accidentally on their feet and in the gut.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

KRANEVELD, F. C. & PETTINGA, J. J. (1948.) Klauw-myiasis bij runderen in de Minahassa (Noord-Celebes). **[Myiasis of the hoof in cattle in North Celebes.]**—*Ned.-ind. Bl. Diergeneesk.* **55.** 179-182. [English summary.] 1725

In 1937 Kraneveld and van der Schaaf reported on the occurrence of a form of foot myiasis exclusively due to the larvae of the oestrid fly *Booponus intonosus*. During 1938-40 the authors examined 677 larvae from 39 affected feet from 22 cattle. *B. intonosus* larvae were present alone in 29 hooves from 16 animals. In the hooves from 3 animals larvae of both *B. intonosus* and *Chrysomyia bezziana* were observed. Two animals were affected only with *C. bezziana*. Eight larvae of *Sarcophaga dux* were recovered from a lesion harbouring *C. bezziana*.

It is the experience of the indigenous population that removal of the affected animals from muddy pastures facilitates recovery and prevents re-infestation. If the affection is not treated it may lead to extensive deformation of the hooves. This form of myiasis has not been observed in other herbivora in Indonesia. Goats are exceptionally rare and practically no water buffaloes are kept in the endemic areas.

—P. L. LE ROUX.

BUXTON, P. A. (1948.) **The problem of tsetse flies** (*Glossina*).—*Proc. 4th Internat. Congr. Trop. Med. Malar.* 1630-1637. 1726

Trapping and marking experiments have shown that there are two types of fly belt: (1) a dense strip of evergreen vegetation bordering water and populated by *G. palpalis* (and, in W. Africa, *G. tachinoides*), (2) areas of mixed vegetation populated mainly by *G. morsitans*.

Methods of reclamation from tsetse include:—(a) Discriminate clearing of vegetation, using information obtained by aerial photography. (b) Settlement of groups of people in compact areas; game disappears and with it, tsetse. (c) Control of game which would otherwise form a healthy reservoir of trypanosomes. (d) Direct attack on fly with D.D.T. or benzene hexachloride. This is suitable for small foci only, *e.g.* a road crossing a fly belt. Large areas have already been successfully reclaimed by methods (a) and (c).—BERYL A. THURSTON.

D'Alessandro, G., Burgio, G. R. & Mariani, M. (1947.) Commento all'attuale recrudescenza della leishmaniosi viscerale a Palermo. Prospettive della lotta contro i flebotomi a mezzo del D.D.T. [**A note on the present recrudescence of visceral leishmaniasis in Palermo. Prospects of controlling *Phlebotomus* by means of DDT.**]—*Rif. med.* No. 21-22. pp. 12. [Abst. in *Rev. appl. Ent.* Ser. B. **38.** 77. (1950), copied *verbatim.*] **1727**

An outbreak of visceral leishmaniasis occurred in Palermo in 1944 and 1945, when more than twice the usual number of cases were reported. There had been no increase in the number of dogs in the city, and though *Phlebotomus* was very common, *P. perniciosus,* Newst., the usual vector of the disease in the Mediterranean area, could not be found, more than 3,000 sandflies taken over three years all proving to be *P. papatasi,* Scop. The sandfly population began to increase in March and reached a sharp peak in late August, but the number of cases declined throughout this period and did not increase again until October, when sandflies were becoming scarce. Despite this and the fact that *P. papatasi* does not transmit visceral leishmaniasis elsewhere, it is considered to have been the local vector, and the discrepancy between its frequency and the seasonal distribution of cases is explained on the hypothesis of a prolonged incubation period for the disease.

Since female sandflies rest on ceilings and reach their sleeping human hosts by a series of short flights down the walls, the possibility of protecting sleepers by fastening broad strips of paper bearing deposits of DDT horizontally along the parts of the walls by the beds was tested. Paper of the newsprint type was treated with a 5 per cent. solution of DDT in kerosene at 20 cc. per sq. metre, allowed to dry and put up in four bedrooms on 14th September. The *Phlebotomus* population was falling at the time, but sandflies were taken in four untreated control bedrooms until the end of October. None was taken in the treated rooms after 16th September. The treatment also gave complete protection from *Aëdes aegypti,* L., which was increasing in numbers at the time.

Jenkins, D. W. (1950.) **Bionomics of *Culex tarsalis* in relation to Western equine encephalomyelitis.**—*Amer. J. trop. Med.* **30.** 909-916. [Author's summary copied *verbatim.*] **1728**

The North American distribution of the mosquito *Culex tarsalis* Coq. is presented in detail and it compares well with the range of the severe 1941 epizootic of the Western equine encephalomyelitis virus in horses. This mosquito has been found to be naturally infected with this virus in six widely distributed areas over its range which extends throughout the great plains, prairies, and western irrigated areas.

During the war period 1942-1946 the known distribution of *C. tarsalis* was extended 500 miles eastward to South Carolina. The species may have been discovered in this area due to more intensive collecting during that time, or the species may have been introduced due to increased airplane and vehicular traffic in that area. The mosquito is most abundant in the western states and becomes less common eastward. The peak of adult abundance in the western United States is in July and August, and eastward the population maximum occurs progressively later until in the southeast, adults are found only in late fall and winter.

The main hosts are wild and domestic animals which are attacked at dusk and night. Human beings are not important hosts. The larvae breed in a large variety of habitats and under a wide range of conditions.

Bosman, S. W., Botha, M. L. & Louw, D. J. (1950.) **Effect of the ked on Merino sheep.**—*Sci. Bull. Dep. Agric. S. Afr.* No. 281. pp. 59. **1729**

Young wethers were artificially infested with keds during the period Oct.-May. Monthly determinations of the amount of infestation revealed a maximum in July. 70–80% of the keds were found on the flanks, and practically none on the back and head. There was no significant difference between the body weights of the infested sheep and those of the control group, but further trials revealed that poorly fed sheep had much less resistance to infestation than well fed ones. Discoloration of the wool caused by the keds could be eliminated by the usual scouring process, but there was a decrease in clean yield of 6–7%. Methods of control include good feeding, segregation of newly acquired stock, keeping infested sheds out of use for one month and dipping the sheep with arsenic and sulphur or D.D.T. (1·0%).

—Beryl A. Thurston.

Delpy, L. P. (1949.) Essai critique de synonymie du genre *Hyalomma.* C. L. Kock 1844 depuis Linné, 1758. [**A critical account of the ticks of the genus *Hyalomma.***]—*Ann. Parasit. hum. comp.* **24.** 464-494. **1730**

D. described ten well-defined species of *Hyalomma* and gave a list of synonyms for each species and also a comprehensive list arranged alphabetically.—Jas. G. O'Sullivan.

PRISELKOVA, D. O. (1949.) **[Pathogenesis and diagnosis of mange.]**—*Veterinariya, Moscow.* **26.** No. 12. pp. 12-15. 1731

A general note. For species determination P. recommends the following method:— a covered petri dish or a wide necked jar containing specimens and skin scrapings is reversed for 10–15 min. over a vessel containing water kept at 50°C. Live mites congregate on the warmed cover, which is then examined. Scrapings are also examined under a lens after a few drops of liquid paraffin have been added; this enables the parasites to be seen against the surroundings.—F.A.A.

GHIDINI, G. M. (1947.) Disinfestazione con D.D.T. da *Sarcoptes mutans* C. Rob. **[Control of *Cnemidocoptes mutans* with DDT.]**—*Mem. Soc. ent. ital.* **26.** Suppl. pp. 70-71. [Abst. in *Rev. appl. Ent.* Ser. B. **37.** 233-234. (1949), copied *verbatim.*] 1732

Fowls in Italy, especially those kept under unhygienic conditions, are frequently infested by *Cnemidocoptes* (*Sarcoptes*) *mutans*, Rob. & Lanq., the preferred site of which is beneath the scales of the tarsi. Infestation spreads rapidly through a flock, so that control measures should be promptly applied.

In a test by the author, six hens were completely freed from infestation by brushing the tarsi with 5 per cent. DDT in kerosene; a second application after three days was necessary in three cases. After treatment, the tarsi were rubbed with olive oil. No harmful effects were observed, the crusts disappeared rapidly, and reinfestation did not occur for a period of 90 days during which the birds were kept clean and roosted apart from the other fowls.

BARKE, A. (1949.) Hexachlorcyclohexan (Demohexol) zur Behandlung der Demodicosis der Hunde. **[Benzene hexachloride in follicular mange in dogs.]**—*Berl. Münch. tierärztl. Wschr.* No. 5. pp. 52-53. 1733

It is stated that follicular mange lesions in dogs healed and few mites could be found after a single application of a proprietary preparation containing a suspension of benzene hexachloride [presumably a mixture of all four isomers, but the concentration was not stated] used without dilution, while after a second application no mites were detectable and regeneration of hair began. In case some of the eggs remained undestroyed a third application was made after 14 days.

Benzene hexachloride γ-isomer at a dose rate of 15 mg. per kg. given intravenously to dogs was lethal in 5–12 hours, but 25 mg. per kg. intravenously of a mixture containing all isomers of benzene hexachloride caused only a temporary fall in the red and rise in the white blood cell count. 10 g. of a 5% mixture was given orally without harm.—NESTA DEAN.

See also abstr. **1684** (isolation of encephalitis virus from *Ixodes ricinus*); **1706** (tick-borne fever).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

ROBERTS, E. W. (1950.) **Studies on the life-cycle of *Fasciola hepatica* (Linnaeus) and of its snail host, *Limnaea* (*Galba*) *truncatula* (Müller), in the field and under controlled conditions in the laboratory.**—*Ann. trop. Med. Parasit.* **44.** 187-206. 1734

The life history and bionomics of *Limnaea truncatula* were studied at a habitat in north-east Denbighshire and in the laboratory. The precise reason for the restriction of the snail to a limited number of habitats was not ascertained.

Snails can survive for considerable periods at low temperatures but, it is stated, cannot withstand drying in the laboratory for more than 15 days at 17°C. It is suggested that gigantism may occur in parasitized *L. truncatula* [the experimental basis for this suggestion appears to be the observation that snails in the laboratory did not grow as large as those in the field]. Development of the eggs of *F. hepatica* was inhibited at less than 10°C. while at 25°C. hatching occurred in 14 days.

The rate of development of the parasite in *Limnaea truncatula* was observed at fluctuating room temperatures of approximately 25°C. From field and laboratory observations it was concluded that effective control of fascioliasis might result from the use of molluscicides in May of each year.—S. BRIAN KENDALL.

WILLMOTT, S. (1950.) **On the species of *Paramphistomum* Fischoeder, 1901 occurring in Britain and Ireland with notes on some material from the Netherlands and France.**—*J. Helminth.* **24.** 155-170. [Abst. from author's summary.] 1735

Two new species of *Paramphistomum* from cattle are described namely *P. hiberniae* n.sp. and *P. scotiae* n.sp., first collected from Irish and Scottish cattle respectively. Notes are made on some specimens received from the Netherlands and France.

P. hiberniae and *P. scotiae* are compared with *P. cervi* and *P. leydeni*.

WAWOROENTOE, F. K. & MANSJOER, M. (1950.) Echinococcose bij een aap. **[Echinococcus in a monkey.]**—*Hemera Zoa.* **57.** 447-456. [English, French and German summaries. Abst. from English summary.] **1736**

The authors described echinococcosis in a monkey, *Cynopithecus niger* from Celebes, which died at the Medical Laboratory at Macassar.

FONTANA, V. P. (1949.) Origen, desarrollo y extension de la hidatidosis en América. **[Origin, development and extension of hydatid disease in America.]**—*Bol. Ofic. sanit. pan-amer.* **28.** 124-256. [Abst. from English summary.] **1737**

F. gave a brief historical review of the disease in South America. It was probably introduced into America by dogs brought by whalers who settled on both banks of the River Plate, and extended slowly to the neighbouring counties. Charts and illustrations are included, showing the extension of the disease among cattle and human beings.

CRIVELLARI, C. A. & MENDY, R. M. (1949.) Profilaxis de la hidatidosis en la República Argentina. **[Prophylaxis of hydatid disease in Argentina.]**—*Bol. Ofic. sanit. pan-amer.* **28.** 554-557. [Abst. from English summary.] **1738**

In compliance with Argentinian law, an eradication campaign of hydatid disease was started through the coordinated efforts of the Ministries of Public Health and of Agriculture.

The work was initiated in Patagonia and epidemiological observations established three principal foci near the Andes and in the Territories of Neuquen, Rio Negro and Chubut, with the following distribution: (1) Province of Buenos Aires, 4,408,373 inhabitants with 80% of the cases in human beings in the Argentine Republic and an index of 0·72%; (2) The pre-mountain region of the Territories of Neuquen, Rio Negro, Chubut and the Military Zone Comodora Rivadavia, 323,460 inhabitants with an index of almost twice that of Buenos Aires Province; (3) The Argentina Littoral formed by the southern parts of the Provinces of Corrientes and Entre Rios. Details are given about other areas. In Patagonia an educational programme was arranged for the general public, by use of radio, films, etc. In the schools, plastic models were used instead of posters. Dogs were submitted to anti-parasitic treatment using arecoline hydrobromide together with a creolin bath. Dispensaries were organized to carry on the control programme. Viscera in slaughter houses are boiled or dumped in dog-proof pits.

CALERO, M. C. & ORTIZ, O. P. (1949.) Triquinosis en Panamá. **[Trichinosis in Panama.]**—*Rev. Inst. Salubridad. Enfermedades Trop.* **10.** 355-358. [Abst. in *Trop. Dis. Bull.* **47.** 651. (1950), copied *verbatim.*] **1739**

The English summary appended to the paper is as follows:—

"The results are presented of the examination of 351 rats gathered in the city of Panama and its surroundings and which were examined with the object of determining their infection by cysts and larvae of *Trichinella spiralis*, utilizing the techniques of compression and digestion. None of the rats was found to be infected.

KOTLÁN, A. (1949.) **On the histotropic phase of the parasitc larvae of *Hyostrongylus rubidus*.**—*Acta vet. hung.* **1.** 76-82. [In English.] **1740**

K. contributes further observations on the histotrophic phase of *Hyostrongylus rubidus* in the stomach wall of the pig and describes a regular and an irregular phase. Histological examinations of the mucosa of the fundus of the stomach in experimentally-infected pigs and rabbits revealed that the third stage larvae had migrated into the crypts of the gastric glands by the 42nd hour after ingestion. Reddish spots in the mucosa appeared by the 4th–5th day and became paler by the 8th day. These changes might persist until the 14th–20th day and were sometimes accompanied by ulceration of the superficial layers of the mucosa. Nodules were formed by the accumulation of inflammatory cells, mostly lymphocytes, leucocytes and eosinophiles around a cavity in which the worm was coiled up. Here the development into the fourth stage larva was completed before it migrated back into the lumen of the stomach by the 13th–14th day. In rabbits some of the larvae behaved irregularly in that their migration from the nodules was delayed for an indefinite period. This phenomenon was rarely observed in pigs. In cases exhibiting this irregular histotrophic phase the nodule formation was more pronounced and was accompanied by greater destruction and necrosis of glandular tissue in the depth of the mucosa producing histological changes of a chronic character. It is accepted that in naturally infected pigs similar lesions may result from a prolonged stay of the larvae in the depth of the mucosa.—P. L. LE ROUX.

KATES, K. C. (1950.) **Survival on pasture of free-living stages of some common gastro-intestinal nematodes of sheep.** — *Proc. helminth. Soc. Wash.* **17.** 39-58. [Author's summary modified.] 1741

Of the parasites studied in the experiments reported herein, free-living stages of *Oesophagostomum* and *Haemonchus* are the least resistant to weather effects on pasture. Good development and survival occur only when the weather is continuously warm and moist. Free-living stages of *Cooperia* and *Trichostrongylus* are slightly more resistant on pasture to all climatic conditions. Pasture stages of *Ostertagia* are highly resistant to cold weather, survive in winter on pasture in Maryland, and have low resistance to drought and high temperatures. The free-living stages of *Nematodirus* are the most resistant to the entire annual complex of climatic conditions. Reasonably long exposures to drought, and high and low temperatures have relatively little effect on the eggs and larvae. Only *Ostertagia* compares favorably with *Nematodirus* in regard to survival over the winter months.

During spring and summer, when there are no significant periods of drought, even when high temperatures are common, considerable numbers of larvae of most of the common nematode parasites of sheep will survive exposures on pasture as long as three to three and one half months, with the possible exception of *Oesophagostomum.*

Information now available indicates that free-living stages of the common genera of gastrointestinal nematodes of sheep rank as follows in regard to their resistance to pasture and range conditions, beginning with the least resistant: *Oesophagostomum, Haemonchus, Cooperia, Chabertia, Bunostomum, Trichuris, Trichostrongylus, Ostertagia, Nematodirus.*

Pastures contaminated with eggs during spring, summer, and autumn and then rested over the winter until the following spring, in regions where subfreezing temperatures occur, are likely to be free or almost free from viable larvae of *Oesophagostomum, Haemonchus, Cooperia, Trichostrongylus,* and probably *Chabertia* and *Bunostomum.*

Resting pastures over the winter will not markedly reduce the numbers of viable larvae of *Ostertagia* and *Nematodirus* in regions subject to subfreezing or higher temperatures. The most injurious effects on the free-living stages of these parasites occur during periods of drought and high temperatures in summer.

MORGAN, D. O., PARNELL, I. W. & RAYSKI, C. (1950.) **Further observations on the seasonal variation in worm egg output in Scottish hill sheep.**—*J. Helminth.* **24.** 101-122. [Authors' summary copied *verbatim.*] 1742

From the study of the worm egg output of nearly fifteen hundred sheep on many hill farms in Scotland it has been shown that:—(i) Worm egg output in ewes and gimmers is lowest in early winter and highest in spring and early summer; this is followed by a marked decrease towards the winter months. (ii) Generally in ewe hoggs the worm egg output is the same as that in older sheep, but shows greater variability; on occasion the spring peak may be absent. (iii) The level of worm egg output of hoggs is generally higher than that of older sheep, and in this respect gimmers tend to fall between hoggs and ewes. (iv) Weather conditions may have an influence on the height and duration of the spring peak of worm egg production.

I. POLLARD, E. P., OWEN, R. W. & EVANS, G. O. (1949.) **Phenothiazine for the control of helminthiasis in lambs: monthly dosing compared with a phenothiazine-salt mixture.**—*J. comp. Path.* **59.** 54-69. 1743

II. PAGE, K. W. (1949.) **The anthelmintic effect of phenothiazine administered in small daily doses to lambs bearing heavy infestations of *Haemonchus contortus*.**—*Ibid.* 70-80. 1744

I. Of six groups of ewes and lambs penned on a ley pasture, two groups were treated with phenothiazine-salt mixture 1:10, two groups by monthly dosing with phenothiazine (10 g. initially then 20 g. monthly) and two groups were kept as untreated controls. Results were assessed according to worm egg counts, P.M. worm counts and live and dead weights of the sheep.

It was found that the treatments given were not really beneficial, but the degree of parasitism in the untreated groups was low and so the effect of treatment could not be dramatically brought out. Monthly dosing had slightly more anthelmintic effect than the phenothiazine-salt, the average daily intake of which was slightly less than 0·2 g. per head—an amount which is generally agreed to be ineffective. In these experiments the main infestation was by trichostrongyles of the stomach and intestine, but *Haemonchus* was absent.

II. Lambs were given pure infestations with *Haemonchus contortus* and kept in a concrete yard which was washed and swept daily to reduce the risk of accidential infection. Six groups of five sheep were used, two groups being given 0·25 g. phenothiazine daily, two groups 0·5 g. phenothiazine daily and the other two

groups, one infested and the other a control, being left untreated. Two of the test groups were given treatment starting 14 days before infestation and two groups starting from the 42nd day after infestation, continuing in all test groups to 70 days after infestation.

A daily dose of 0·5 g. had a marked anthelmintic effect on lambs with heavy infestations and treatment before infestation protected lambs from a single massive infecting dose. Daily doses of 0·25 g. were much less effective and, indeed, unsatisfactory. Results as judged by weight gain did not match those as judged by worm egg counts. One of the groups given 0·5 g. daily made the best weight gain, (apart from the controls) followed by the two groups receiving 0·25 g. daily, then the other group given 0·5 g. daily.

An attempt was made to find out whether daily treatment could prevent the development of larvae in faeces, but this could not be determined with the technique used.—J. EDWARDS.

GIOVANNONI, M. & KUBIAK, G. V. L. (1947.) Fauna parasitológica Paranaense. IV. Lista prévia da ocorrência de helmintos em animais domésticos. **[Parasitic fauna of Parana. IV. Helminths in domestic animals.]**—*Arq. Biol. Tec., Curitiba.* **2.** 225-231. [English summary.] **1745**

A list is given of helminth parasites found in animals slaughtered in abattoirs or for humane reasons, together with a table showing their incidence in percentages.—R. MACGREGOR.

STEPHAN, S. A. R., TURNER, S. G. & PAINTER, R. A. (1950.) **The occurrence of the "kidney worm" of swine (Stephanurus dentatus Diesing 1839) in Natal.**—*J. S. Afr. vet. med. Ass.* **21.** 100-102. **1746**

Stephanurus dentatus is recorded in the Union for the first time.

CHANG, E. (1949.) **Uveitis of a Cantonese caused by *Gnathostoma spinigerum* (Owen 1836). Report of a case.**—*Chinese Med. J.* **67.** 166-168. [Abst. in *Trop. Dis. Bull.* **47.** 664. (1950), copied *verbatim*. Signed: E. O'G. KIRWAN.] **1747**

Gnathostoma spinigerum is a nematode normally found parasitic in cats and dogs. Man is an unnatural host in whom the worm does not grow beyond the immature stage. In the thirteen cases of human gnathostomiasis reported in the literature, the worms found were, except in one instance, all immature forms. This is the first reported case with the worm in the eye causing uveitis. For four months the patient suffered from a series of troubles in the left eye. They started with a corneal ulcer, followed by iritis and finally by severe uveitis and secondary glaucoma with the worm seen in the anterior chamber. The eye improved after extraction of the worm and the vision returned to 6/18. The infection occurs in man by eating inadequately cooked infected fish, the secondary intermediate host of the worm. The absence of eosinophilia in the blood and the absence of other signs in the body seems to indicate that the infection in this case was localized only in the eye.

PICK, F. (1949.) Éclosion spontanée des oeufs d'*Ascaris megalocephala* sur silico-gel. **[Spontaneous hatching of *Ascaris megalocephala* eggs on silica-gel.]**—*Bull. Soc. Path. exot.* **42.** 360-362. **1748**

Spontaneous mass hatching of *A. megalocephala* [*A. equorum*] eggs occurred in 27 days when, after isolation in Ringer's solution and horse serum at pH 7 and at 34°C., the eggs were placed on silica-gel under the same conditions. It is suggested that the sky blue coloration of the internal layers in the presence of iodine may be due to the presence of a certain polysaccharide.—M. L. CLARKE.

KOZAR, Z. (1948.) **Age-acquired resistance and the influence of diet and light on the parasite *Ascaridia columbae* in pigeons.**—*Bull. Inst. Mar. & Trop. Med., Gdańsk.* **1.** 39-44. [In English.] **1749**

Age resistance was demonstrated. Light was not significant in the development of *Ascaridia columbae* infestation. In pigeons kept on a sub-standard diet there was a reduction of output of eggs by the parasites and a decrease in the size of the adult worms.

—JAS. G. O'SULLIVAN.

See also abstr. **1670** (*Babesia* infection and helminth invasion in horses); **1724** (poultry parasites); **1878-1879** (staining of nematodes).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

WOODWARD, R. R. & KNAPP, B., JR. (1950.) **The hereditary aspect of eye cancer in Hereford cattle.**—*J. Anim. Sci.* **9.** 578-581. [Authors' summary copied *verbatim*.] **1750**

According to the evidence presented, there appears to be hereditary susceptibility to eye cancer. In the herd studied the average incidence was found to be 4·7 percent and the per-

centage of incidence increased with the age of the animal. There were pronounced increases at five and again at seven years of age. Almost 20 percent of the animals affected were mother-and-daughter pairs and in one family carcinomas have been found in each generation up to the present time. The progeny of two sires had an especially high percentage of lesions. In view of the findings described in this paper, certain control measures were suggested.

STRONG, L. C. (1951.) **Test of correlation between the pink-eye gene and susceptibility to induced fibrosarcoma in mice.**—*Cancer Res.* **11.** 42-45. [Author's summary copied *verbatim.*] 1751

A mutation at the pink-eye locus occurred in the descendants of dark-eyed mice injected with methylcholanthrene (mutation=P to p). Mice showing the recessive mutation and their dark-eyed sibs continued to develop (*a*) fibrosarcomas at the site of injection of methylcholanthrene, (*b*) lung adenomas, and (*c*) a mucosal lesion just anterior to the pylorus, at the same rate and incidence as mice of their dark-eyed ancestry.

HOSTER, M. S., MCBEE, B. J., ROLNICK, H. A., VAN WINKLE, Q. & HOSTER, H. A. (1950.) **Macromolecular particles obtained from human neoplastic and non-neoplastic lymph nodes. I. Procedure and preliminary results.**—*Cancer Res.* **10.** 530-538. [Authors' summary slightly modified.] 1752

The segregation of dispersed cellular particles obtained from human lymph nodes was carried out using a ten-step centrifugation procedure and a fluid medium consisting of 0·1 M phosphate buffer, pH 8·0, containing 0·03 per cent or 0·3 per cent heparin. Nuclear, mitochondrial, and submicroscopic particle fractions are obtained at suitable gravitational forces.

An analysis of the particle populations of the high gravity centrifugation sediments indicates the presence of polydispersed particles ranging from 10 to 280 mμ in neoplastic and non-neoplastic lymph nodes. The predominant particle size obtained from Hodgkin's lymph nodes, 10–20 mμ, differs significantly from the particle sizes found in the non-neoplastic lymph nodes.

The presence of ribose nucleic acid and the absence of desoxyribose nucleic acid were demonstrated in the high gravity sediments. The percentages of nucleic acid in high gravity sediments of neoplastic and non-neoplastic lymph nodes were compared.

ZAMECNIK, P. C. (1950.) **The use of labeled amino acids in the study of the protein metabolism of normal and malignant tissues: A review.**—*Cancer Res.* **10.** 659-667. [Author's summary copied *verbatim.*] 1753

A reactivation of interest in studies on the mechanism of protein synthesis has come about as a result of the availability of C^{14}-labeled amino acids. Although much information has been gathered, the crucial decisions as to whether phosphate bond energy is directly concerned in synthesis of the peptide chain, and whether the proteolytic enzymes participate, are still lacking. In application of the isotope technics to the cancer problem, no specific reaction has as yet been uncovered in which malignant tissue as a class differs qualitatively or quantitatively from all normal tissues. The dynamic aspects of the protein metabolism of tumors have thus far been the subject of only fragmentary studies. There appears to be a good opportunity for exploration with isotope technics of the property of tumors to continue to build new protein under dietary circumstances in which the remainder of the animal loses weight.

NUTRITIONAL AND METABOLIC DISORDERS

MALMROS, H. (1950.) **The relation of nutrition to health. A statistical study of the effect of the war-time on arteriosclerosis, cardiosclerosis, tuberculosis and diabetes.**—*Acta med. scand.* Suppl. No. 246. pp. 137-153. [In English. Author's summary slightly modified.] 1754

In connection with starvation and privations during the war and the post-war years tuberculosis flared up in Germany. The mortality figures from Norway show, however, that a moderately reduced calorie supply need not lead to an increased tuberculosis morbidity if the conditions are otherwise favourable.

The mortality from arterio- and cardiosclerosis declined in Finland, Norway and Sweden during the "lean" years of the war. It is clear that this is associated with a reduced consumption of eggs, butter and other foodstuffs rich in cholesterol. The decline stands out most prominently among the urban population, which did not possess facilities for obtaining additional food beyond the official rations.

In Denmark, where the total fat consumption certainly declined but where the butter and egg consumption increased no fall was noticed in the death rate from arteriosclerosis during

the war, but there was some increase during the two years immediately following the end of the war. In the U.S.A. the number of deaths from arteriosclerosis has steadily increased.

The diabetic morbidity and mortality also fell in Sweden in connection with the reduced supply of foodstuffs during the period of crisis.

There is much which goes to show that in Denmark, Sweden and the U.S.A. the consumption of eggs, butter, milk and other animal fats is at present too high and may involve serious risks for public health.

SHAW, J. C., HATZIOLOS, B. C. & LEFFEL, E. C. (1950.) **An approach to the etiology of ketosis in dairy cows.**—*J. Amer. vet med. Ass.* **117.** 103. [Only abst. given. Abst. from abst.] **1755**

On the basis of the histopathologic condition of the anterior lobe of the pituitary gland and adrenal cortex in cows with ketosis, and the response to treatment, the authors are of the opinion that this disease is basically a general adaptation syndrome involving the pituitary-adrenal cortical system, brought on by various stresses when the organism is overworked.—K. MACFARLANE.

CARLSTRÖM, B. & CARLSTRÖM, N. (1950.) Den puerperala acetonämiens ätiologi. [**Aetiology of puerperal acetonaemia.**]—*Nord. Vet. Med.* **2.** 581-590. [English and German summaries. Abst. from English summary.] **1756**

In previous papers Carlström, B. [*V.B.* **13.** 101] expressed the opinion that so-called primary puerperal acetonaemia in cattle is due, not to carbohydrate deficiency but to the inability of the body to utilize and effectively convert carbohydrates. For this reason reserves of fat in the body, and also protein reserves, must be ulitized more extensively for combustion and production of lactose. During these processes abundant acetone bodies are formed which are normal intermediary products in the breakdown of fat. This conception of the nature of acetonaemia is based on the fact that as a rule the rations fed to cattle are rich in carbohydrates (sugar, starch and cellulose) and that vitamin B_1, and adenosinetriphosphoric acid and creatine, have a distinctly beneficial effect on the course of the disease. This means that substances which the body itself uses as catalysts in the metabolism of carbohydrates, have a favourable effect on the course of the disease without any changes in the composition of the ration.

In the present investigation the authors found that in acetonaemia, and also in some cases of puerperal paresis, the potassium concentration in blood serum is lower than normal, *i.e.* 14–20 mg. % as against 20–26 normally. This is evidence of a disturbance in the function of the adrenal cortex, which also regulates the metabolism of carbohydrates and proteins. In a series of experiments they therefore treated acetonaemia with adrenal cortical extracts, desoxycorticosterone acetate (D.C.A.) and KCl. These substances have a beneficial effect on the course of the disease, and simultaneously they induce a rise in the potassium and the blood sugar concentrations. From this it is concluded that primary acetonaemia in cattle is due to hypofunction of the adrenal cortex.

In some cases of puerperal paresis with a relatively high calcium concentration (8–10 mg. %), a lowered potassium concentration and acetonaemia, in which calcium therapy or insufflation of the udder are not satisfactory, concurrent treatment with potassium salts or with adrenal cortical hormones has been found beneficial.

VANDERLINDE, R. E. & WESTERFIELD, W. W. (1950.) **The inactivation of estrone by rats in relation to dietary effects on the liver.**—*Endocrinology.* **47.** 265-273. [Authors' summary copied *verbatim*.] **1757**

[The authors attempted to find if the effect of a low protein diet on oestrogen inactivation in the liver was caused by a depletion of liver xanthine oxidase.] The estrogen draining through the liver from mesenterically implanted pellets of estrone in castrate rats was inactivated when the rats were maintained on: 1) chow [protein content 21%] *ad libitum*, 2) normal or 50% restricted intake of a 21% purified casein diet. The liver estrogen inactivating system was not maintained by: 1) an 8% [low protein] purified casein diet *ad libitum*, or 2) 50% of the usual intake of chow. The results are consistent with the concept that protein intake is the critical dietary factor involved in maintaining the estrogen inactivating system in the liver.

The effect of diet on the estrogen inactivating system was independent of its effect in depleting liver xanthine oxidase. Both were depleted on a low-protein diet, but only the estrogen inactivating system was seriously depleted on a 50% chow intake. Liver and kidney d-amino acid oxidases were not affected appreciably by either a low-protein diet or food restriction.

Normal estrus cycles were maintained on a low-protein diet, but were stopped in anestrus on a 50% chow restriction. Pituitary gonadotropin increased slightly during inanition.

MATHER, R. E., PRATT, A. D. & HOLDAWAY, C. W. (1949.) **Fused tricalcium phosphate as a low-fluorine phosphorus supplement for dairy cattle.**—*J. Dairy Sci.* **32.** 228-236. 1758

During the 1939-45 war owing to the shortage of feeding-grade bone meal a fused tricalcium phosphate was produced from rock phosphate with only a slightly lower P content than the original material but with the F content reduced from 3·5–4% to under 0·4%. Earlier attempts to use raw rock phosphate (which has a Ca:P ratio almost identical with that of bone) had usually ended disastrously owing to fluorine poisoning.

Six castrated male calves were divided into three groups of two and were given fused tricalcium phosphate supplements equivalent to 0·0048, 0·02 and 0·04% of fluorine respectively in the grain ration. The additions were made at a few weeks of age and were continued until slaughter at from 42–44 months. One animal in the lowest fluorine-intake group died from traumatic pericarditis (ingested wire) prior to the expiry of the experiment but otherwise all animals appeared to remain clinically normal. Rate of growth was not significantly affected, serum calcium and serum inorganic phosphorus levels remained within the normal range, and the macroscopic appearance of the viscera at slaughter was normal. F deposition in the bones was, however, increased, while in the groups receiving the two higher levels of F there was marked roughness, discoloration and abrasion of the teeth.

It is concluded that a grain ration containing 0·02% of F is unsafe, but that the fused calcium triphosphate supplement containing only 0·24% F could nevertheless be used with discretion. It is admitted that the effect of F upon growth may have been less in steers than in heifers subjected to the added strain of gestation and lactation.

—ALASTAIR N. WORDEN.

SHIRLEY, R. L., OWENS, R. D. & DAVIS, G. K. (1950.) **Deposition and alimentary excretion of phosphorus in steers on high molybdenum and copper diets.**—*J. Anim. Sci.* **9.** 552-559. [Authors' summary copied *verbatim.*] 1759

Jerseys steers on high and low levels of molybdenum and copper were studied in regard to their capacity to deposit radioactive phosphorus, injected intramuscularly, in the principal tissues and organs of the body as well as the distribution of the isotope in the contents of the various alimentary segments and in the feces and urine. The results were calculated as percent dose in the sample and as percent dose per 100 milligrams of total phosphorus present.

The steers were slaughtered 40 hours after the administration of the isotope and values were obtained for the liver, heart, kidney, lung, pancreas, spleen, salivary, parotid and adrenal glands, brain, rib and femur as well as for the blood and alimentary tissues and contents.

The sodium molybdate supplement and the copper sulfate supplement markedly changed the pathway of phosphorus excretion from the partition usually found in cattle to one in which most of the phosphorus was excreted in the feces. The rate of phosphorus excretion was markedly increased when the molybdate supplement was given alone.

Copper sulfate and sodium molybdate supplements given together resulted in less effect upon the pathway of phosphorus excretion than when given individually but did result in slightly lower tissue phosphorus value than those found in the other animals.

LEE, H. J. (1950.) **The occurrence and correction of cobalt and copper deficiency affecting sheep in South Australia.**—*Aust. vet. J.* **26.** 152-159. 1760

A review of the symptoms, geographical distribution, seasonal incidence and control of cobalt and copper deficiency. All instances of cobalt deficiency in this State have occurred on calcareous soils largely of marine origin. Copper deficiency is common in the same areas, but is not restricted to them. As in other parts of the world, there is a highly variable seasonal incidence of copper deficiency in all but the most deficient areas. In contrast to observations elsewhere, however, the incidence of cobalt deficiency has also varied from year to year in particular areas. The possible reasons for these variations are discussed. Control measures are discussed in detail, with particular emphasis on the possibility of chronic copper poisoning occurring in sheep as a result of remedial measures.—R. L. REID.

SMITH, W. S. (1950.) **The occurrence and correction of cobalt and copper deficiency affecting sheep in South Australia.**—*Aust. vet. J.* **26.** 159-162. 1761

Problems associated with the diagnosis and correction of cobalt and copper deficiencies in sheep in the field are discussed. Particular emphasis is placed on the difficulties of diagnosis in heavily parasitized flocks and of the possibility of chronic copper poisoning arising from the use of copper supplements.

—R. L. REID.

Dumaresq, J. A. & Wherrett, A. B. (1948.) **Coasty disease trials, King Island, 1940-47.**—*Tasm. J. Agric.* **19.** 74-78. **1762**

The onset of Coast disease in sheep on King Island was prevented for five years by a single application of 5 lb. copper sulphate and 0·5 lb. cobalt sulphate per acre of "coasty" pasture. When the disease became evident at the end of this period there was no evidence of copper deficiency and drenching with cobalt alone was effective in curing the condition.

—R. L. Reid.

Garner, R. J. (1950.) **Availability of the magnesium of grass to the ruminant.** [Correspondence.]—*Nature, Lond.* **166.** 614. **1763**

In tests on g. pigs fed grass cut at random in sufficient quantity for one experiment and kept as fresh as possible, G. found that 65–86% of the magnesium of fresh grass was retained by g. pigs. In tests on cattle 63–74% was retained. The amount of magnesium retained is apparently not dependent upon the magnesium content, the Ca : P ratio or the crude fibre content of the food.—K. Macfarlane.

Novotný, E. (1948.) Osteomalacie a pojištění hospodářských zvířat. **[Osteomalacia and the insurance of farm animals.]**—*Čas. československ. Vet.* **3.** 229-230. **1764**

N. discussed the causes of osteomalacia in cattle and the calcium and phosphorus content of various forage plants and feeding stuffs. The economic aspect of osteomalacia is more serious than is commonly realized. Examination of records of the Moravian livestock insurance company revealed that during 1903-23 the incidence in insured cattle varied from 0·3–5·2%. During 1931-33 it was 0·7–0·9%; there was no marked fluctuation during the German occupation of Czechoslovakia. The highest post-war incidence recorded in 1947 was 0·6%. The incidence tends to be higher in years following drought and none of the commercial remedies alone can cure the condition, unless cattle are fed an adequate and wholesome diet.—E.G.

Colby, R. W., Rau, F. A. & Dunn, R. C. (1950.) **Effect of feeding aureomycin to fattening lambs.**—*Proc. Soc. exp. Biol. N.Y.* **75.** 234-239. [Authors' summary copied *verbatim.*] **1765**

The feeding of 100 mg. of aureomycin daily to lambs resulted in markedly decreased feed consumption and weight loss. Bacterial counts of rumen contents of lambs fed aureomycin and aureomycin plus vitamins was much higher than control animals, indicating that perhaps the aureomycin had destroyed certain strains of bacteria, thereby eliminating a normal competitive environment and permitting less desirable strains of bacteria to multiply.

Fountaine, F. C. & Atkeson, F. W. (1950.) **The effects of an APF concentrate containing aureomycin on the growth and well-being of young dairy calves.**—*J. Anim. Sci.* **9.** 646-647. [Only abst. given; abst. from abst.] **1766**

The growth response of dairy calves from birth to 42 days of age on a normal diet supplemented with an APF [animal protein factor] concentrate containing aureomycin (a fermentation product containing residual aureomycin equivalent to about 5 mg. per g.) was compared to growth standards and to control calves fed only a normal diet. Twelve calves representing four breeds were used. Starting at random, every other calf born within each breed was selected (eight in all) to receive the supplement, four serving as controls. The supplement was fed daily, by capsule at the rate of 3 g. per 100 lb. body weight. All calves were fed as follows: colostrum from birth to 3 days, at 4 days whole milk at the daily rate of 1 lb per 10 lb body weight; at 7 days hay and grain; at 21 days a gradual change over to skim milk. In 42 days the eight supplemented calves gained an average of 30·8 lb. while the four controls gained an average of only 18·0 lb. The gain of the supplemented calves, however, was not greater than the expected average gain according to the Ragsdale growth standard which by breed and sex is also 30·8 lb. The controls were considerably below their average expected gain of 32·0 lb. A much lower incidence of scouring was noted in the supplemented calves and they were, on an average, thriftier and in better condition than the controls. In this study the APF concentrate containing aureomycin appears to have enhanced growth by preventing scours.

Colby, R. W., Rau, F. A. & Couch, J. R. (1950.) **Effect of feeding an 'animal protein factor' concentrate to young lambs.**—*Amer. J. Physiol.* **163.** 418-421. [Authors' summary copied *verbatim.*] **1767**

The feeding of an animal protein factor supplement to young lambs decreased growth and feed consumption during the post-suckling period. Due, probably, to the protective effect of the maternal milk, growth of lambs fed an A.P.F. supplement was not affected during the suckling period, though feed consumption of this group was reduced. The A.P.F. supplement lambs produced wool fibres of slightly shorter length and slightly smaller diameters than non A.P.F. supplemented lambs. The

A.P.F. supplement produced significantly lower levels of vitamin B_{12} in the blood of the lambs at both weaning time and during the feeding period following weaning. No differences were observed in the tissue levels of vitamin B_{12} of the two groups.

COLBY, R. W., CUNHA, T. J. & WARWICK, E. J. (1950.) **Effect of vitamin A supplementation on reproduction of ewes grazed on green and dry summer ranges.**—*J. Anim. Sci.* **9.** 446-456. [Authors' summary copied *verbatim.*] 1768

Ewes grazed on green mountain feed and then fed poor-quality, low carotene roughages with a grain supplement to supply extra protein and total digestible nutrients during the winter were not benefited by vitamin A supplementation. When range ewes were grazed on either green or dry summer range and then fed poor-quality hay during gestation and lactation, the only benefit that seemed to be derived from vitamin A supplementation of the poor-quality hay was a small increase in blood levels of vitamin A in some of the ewes. This improvement in blood levels was not expressed, to any consistently significant extent, in percentage lamb crop, birth weights, vigour or growth rates of the lambs.

The good results obtained with all poor-quality roughages studied was probably influenced by the fact that additional concentrates were fed so that total protein and total digestible nutrient intakes were not limiting factors and were about the same in all lots. Under the conditions of this experiment, the further supplementation of these poor-quality roughages with vitamin A did not seem to be of any help.

LILENKOV, I. P. (1947.) **[Avitaminosis in dogs in the Arctic.]**—*Veterinariya, Moscow.* **24.** No. 8. pp. 44-45. 1769

Alsatian dogs in the Arctic winter, when fed on fish, salt meat, pearl barley and cooked dried vegetables, developed conjunctivitis and varied symptoms of deficiency disease, which are described. Access to spring grass, which they greedily devoured, cured the condition. Dogs fed on a diet of animal fat, fresh meat and green cooked vegetables maintained good health. A daily addition of 10–15 g. yeast or of dried nettles (*Urtica dioica*) or senna flour also prevented avitaminosis. To maintain health in puppies vitamin A and dried yeast were necessary. A daily addition of 5 g. cod-liver oil only prevented rickets, but other vitamin deficiency symptoms remained unless suitable vitamin preparations or foods containing the necessary vitamins were given.—F.A.A.

BEERSTECHER, E., JR. (1950.) **The comparative biochemistry of vitamin function.**—*Science.* **111.** 300-302. [Author's conclusions copied *verbatim.*] 1770

On the basis of nutritional requirements, distribution, and relationship to the metabolic rate, the vitamins fall into two distinct groups. One group includes those vitamins which have been classed as B vitamins, and which show themselves in a variety of ways to be intimately associated with the fundamental metabolic apparatus of living cells. A consideration of nutritional requirements, blood levels, tissue levels, and metabolic rates shows that these vitamins are associated in increased amounts with smaller species, whereas the remainder of the vitamins manifest no such relationships and appear to have only highly specialized functions for certain tissues and cell groups. A further comparative biochemical study of this group may do much to elucidate the specific functions of its members.

WILSON, J. G. & BARCH, S. (1949.) **Fetal death and maldevelopment resulting from maternal vitamin A deficiency in the rat.**—*Proc. Soc. exp. Biol., N.Y.* **72.** 687-693. [Authors' summary copied *verbatim.*] 1771

This report constitutes a confirmation of the original experiments of Warkany and co-workers in which congenital malformations were induced in fetal and newborn rats by maintaining the mothers on vitamin A deficient diets In addition, a method has been standardized which permits prior recognition of imminent death and resorption of the conceptuses, thereby making it possible to collect many severely malformed fetuses that would otherwise be destroyed *in utero*. Three criteria that proved reliable in anticipating prenatal destruction of fetuses were: (1) the presence of more than 25% of cornified cells in the vaginal smear at any time during pregnancy; (2) the presence of blood in the vaginal smear in excess of or at times other than that comprising the usual placental sign; and (3) a loss of weight by the mother after the 10th day of pregnancy.

Malformations involving the eye, cardio-vascular system, and genito-urinary tract were found in the fetuses or newborns from all but one of the pregnancies from which intact offspring were obtained after the 14th day of gestation.

HALE, W. H., POPE, A. L., PHILLIPS, P. H. & BOHSTEDT, G. (1950.) **The B-vitamins in**

relation to a cobalt deficiency in sheep.—*J. Anim. Sci.* **9.** 484-490. [Authors' summary copied *verbatim*.] 1772

Vitamin B_{12} injected into cobalt-deficient lambs in doses of 100γ daily (1 lamb) or given orally in 200γ daily doses (1 lamb) for a period of 4 weeks failed to produce a satisfactory response.

A complete B-vitamin supplement given daily by mouth for a period of 7 weeks reversed all symptoms of a cobalt deficiency (2 lambs). A supplement of only folic acid and pyridoxine aggravated a cobalt deficiency as measured by external appearances, hemoglobin values, weight losses, and a highly distorted lymphocyte and neutrophile ratio (2 lambs). A complete B-vitamin supplement less folic acid and pyridoxine in 2 other lambs gave varying results.

These data suggest that the physiological role of cobalt in sheep is by some route other than through vitamin B_{12} even though there is an extremely large synthesis of this vitamin in the rumen of cobalt-supplemented sheep. The beneficial action of cobalt may be through production of the members of the B-vitamins in the rumen.

SLAGSVOLD, P. (1948.) **Nutritional disease in swine by feeding great amounts of molasses. Possible thiamin deficiency in pigs on rations containing silage preserved with formic acid.**—*Kgl. Lantbrukshögsk. Ann.* **15.** pp. 251 290. [In English.] 1773

A series of feeding trials was set up in an attempt to determine the cause of the deleterious effects attributed to the incorporation of large amounts of molasses in the diets of pigs. When molasses was substituted for 50% of the grain in a basal diet comprising oats, barley, tankage [prepared from cooked animal offal, a rich protein food] mineral mixture and vitamin supplements, growth rate was impaired, appetite was variable, there was incoordination of limb movements, and the blood levels of pyruvic acid and of potassium were raised. These symptoms and changes in blood levels were further aggravated when silage (preserved by formic acid) was added to the diet containing molasses. The addition of yeast to the molasses diet, however, reduced the harmful effects, and it is concluded that molasses in some way destroys vitamin B_1 in the diet or interferes with its absorption, and that this effect is aggravated by silage of the type used.

When pigs (from 23–100 kg. liveweight) receiving the basal diet were dosed daily with 43·7 g. of potassium, the blood potassium levels rose by over 2 mg. per 100 ml., and growth was retarded. There were, however, no harmful effects otherwise.

—ALASTAIR N. WORDEN.

TURPIN, R., SCHMITT-JUBEAU, H. & JEROME, H. (1950.) Action du diéthylstilboestrol sur la cuprémie. [**The action of stilboestrol on cupraemia.**]—*C.R. Soc. Biol., Paris.* **144.** 352-355. 1774

Variations in the copper content of human blood have been noted during the menstrual cycle and pregnancy, such variations apparently being under hormonal influence. An opportunity to study this question has been provided following the introduction of a month's course of stilboestrol administration at the rate of 0·1 mg. per kg. body weight daily in the treatment of infantilism. In each case so treated a significant rise of blood copper has been found immediately after stilboestrol administration as has also been observed in other conditions such as hirsutism or myxoedema treated with stilboestrol. Other synthetic oestrogens such as dienoestrol or cycloestrol do not appear to influence the blood copper level.

—J. A. NICHOLSON.

See also absts. **1714** (diet protein in relation to disturbed host-parasite balance); **1816** (vitamin A); **1817** (stimulation of growth in pigs by iodinated casein and stilboestrol); **1834** (factors affecting vitamin A and carotenoid content of bovine colostrum); **1897** (book, animal nutrition).

DISEASES, GENERAL

TURBET, C. R. (1949.) **Diseases of animals recorded in Fiji.**—*Agric. J. Fiji.* **20.** 89-91. 1775

The diseases of cattle, horses, sheep and goats, pigs, dogs and cats, and poultry are listed with some indication as to their frequency. A list is also given of the internal parasites which have been recorded in these animals in Fiji.—K. G. TOWERS.

GRAY, D. F. (1949.) **Diseases of animals in Ethiopia.**—*Aust. vet. J.* **25.** 211-214. 1776

G. spent some months in Ethiopia as the veterinary member of an F.A.O. advisory group. In an address to the Victorian Division of the Australian Veterinary Association on his return, he gave a brief general account of the country and of its rural industry. Diseases of livestock are numerous, the most serious being rinderpest which is believed to kill about 5% annually of the estimated 20 million head of cattle. Attention was concentrated on immunization against this disease. Nigerian goat virus and lapinized virus were

found to give the best results with Ethiopian cattle which are a slowly maturing zebu type. Legislation was pending, making vaccination and branding compulsory. As G. pointed out, an eradication campaign offers peculiar difficulties in a country which lacks communications, any method of tax collection, fences, permanent water or veterinary personnel and in which wild game may act as reservoirs of infection. Other diseases met with in cattle, sheep and horses were listed.—D. A. GILL.

DEINHARDT, F. (1950.) Fremdkörper und Saatgutbeizmittel bei Erkrankungen des Pferdes. [**Foreign bodies and seed disinfectants causing colic in horses.**]—*Wien. tierärztl. Mschr.* **37.** 29-30. 1777

Two case reports, one of fatal colic caused by foreign bodies, the other of poisoning by a product named "ceresan", the nature of which is not given; it is used as a dressing for seeds.
—ROY MACK.

LOWE, E. G. (1949.) **Obscure lameness in cattle.**—*Yearb. Inst. Insp. Stk., N.S.W.* 1949. pp. 91-92. 1778

The condition closely resembles that described by Madden [*VB.* **16.** 74.]. Young cattle are affected and most cases are fatal. Symptoms are anorexia, flow of clear mucus from the nose, and unsteadiness of the hind legs. In one case examined P.M. an area of fatty tissue near the left acetabulum was fluid; it extended a short distance between muscle bundles. Patches of muscle were paler. Microscopic examination of the affected muscle did not reveal myositis. Bacteriological examinations were negative. It is thought that the condition may be a manifestation of ephemeral fever (three-day sickness).—H. McL. GORDON.

WOODS, G. T., SHIDELER, R. K., MYERS, H. F. & RHOADES, H. E. (1950.) **An observation on bovine hemoglobinuria.**—*Vet. Med.* **45.** 455-456. [Authors' summary copied *verbatim.*] 1779

Fourteen cases of hemoglobinuria occurred in a lot of 70 two-year-old feeder heifers. Five animals died. The significance of a strain of *Clostridium perfringens* [*Cl. welchii*] isolated from these animals is not clear. Nine of the ten affected animals treated with sulfamerazine and penicillin recovered.

CHARLES, G. (1949.) **Infant lamb mortalities.**—*Yearb. Inst. Insp. Stk., N.S.W.* 1949. pp. 84-85. 1780

The investigation dealt with lambs which died during the first 72 hours after birth. Mortality ranged from 5–80%, with an average of 15–25%.

P.M. examination almost invariably revealed a distended urinary bladder with inflammatory changes in the wall. The omentum was haemorrhagic, the mesenteric lymph nodes were enlarged, and although the kidneys were normal the surrounding fat was red and often gelatinous. There might be haemorrhages in a number of organs. The results of bacteriological examination were usually negative, but in two cases coliform organisms were recovered.

The alimentary tract was invariably empty —an indication that the lambs had not been suckled, possibly because the ewes carried heavy fleeces with large amounts of wool on the flanks which prevented young lambs from finding the teats. Lambs often sucked strands of wool, "sweat dags", in the flank region and may have acquired infections with faecal organisms.—H. McL. GORDON.

EDGAR, G. (1949.) **Bent leg in lambs.**—*Yearb. Inst. Insp. Stk., N.S.W.* 1949. p. 43. 1781

"Bent-leg" is a non-infectious condition affecting the fore-limbs of lambs from 3 to 4 months of age. The affected leg is generally bowed outwards. The condition has been reported from widely scattered regions. Its occurrence is extremely sporadic. Preliminary investigations have not suggested a cause.
—H. McL. GORDON.

RUMNEY, W. J. & SCHOFIELD, F. W. (1950.) **Pulmonary hypertrophic osteo-arthropathy (Marie's disease), [in a dog].**—*Canad. J. comp. Med.* **14.** 385-387. 1782

The subject was an 11-year-old male which had had symptoms of a pulmonary condition for two years. Thickening of the limbs had been noticed for the last two months. The blood picture revealed neutrophilia and monocytosis; urine analysis did not yield results indicative of disease. The animal was destroyed.

The four limbs were greatly thickened because of an increase of subcutaneous tissue and underlying bone. The bones were covered with an uneven and irregular deposit of osteoid tissue. The increase was as much as 0·5–3·5 cm. in thickness. In the intermediate lobe of the right lung there was a spherical tumour mass 6 cm. in diameter, diagnosed as a carcinoma.

The authors are convinced that the condition was that of Marie's disease. They questioned whether the tumour could have interfered with the respiratory and circulatory pro-

cesses sufficiently to have caused the extensive lesions in the extremities.—P. J. G. PLUMMER.

JANSEN, J., KUNST, H., VAN DORSSEN, C. A., VAN DEN BERG, H. A., ROEPKE, W. J. & TEN THIJE, J. H. (1949.) Een onbekende ziekte bij kippen in Nederland. [**An unknown fowl disease in Holland.**]—*Tijdschr. Diergeneesk.* **74.** 825-830. **1783**

A preliminary report of a disease in which young hens die suddenly with a cyanotic comb and wattles. White necrotic pin-point foci are present in the liver. Bacteriological findings are negative. Eggs, incubated for eight days, were inoculated with liver suspension into the allantoic cavity. The embryos died within 3–8 days. Three passages could be made. A virus is considered to be the cause of the disease.

—C. A. VAN DORSSEN.

HIGGINS, C. C. (1951.) **Experimental production of urinary calculi.**—*J. Amer. vet. med. Ass.* **118.** 81-85. **1784**

H. reports experiments in which urinary calculi were produced in dogs and rats by feeding a diet deficient in vitamin A. If infection in the urinary system was not too pronounced, dissolution of the stones could be produced by the use of an acid-ash vitamin A diet. Vitamin A deficiency is not responsible for all stones. The promiscuous use of sulphonamide drugs is condemned if not accompanied by some alkali such as sodium bicarbonate. By the use (in man) of a suitable post-operative diet the incidence of recurrent stone was reduced from 16·9% to 2·9%. If it is a phosphate and carbonate stone, the patient is placed on a high vitamin A acid-ash diet. If the stone is composed of cystine, uric acid and xanthine, the patient is placed on a high vitamin A-alkaline-ash diet.—H. L. GILMAN.

STAMLER, J., SILBER, E. N., MILLER, A. J., AKMAN, L. BOLENE, C. & KATZ, L. N. (1950.) **The effect of thyroid- and of dinitrophenol-induced hypermetabolism on plasma and tissue lipids and atherosclerosis in the cholesterol-fed chick.**—*J. Lab. clin. Med.* **35.** 351-361. [Authors' summary copied *verbatim.*] **1785**

Desiccated thyroid has a partial inhibitory effect on cholesterol-induced hypercholesterolemia and atherosclerosis in the chick. It also lowers the hyperphospholipidemia and hyperlipemia of cholesterol-feeding, decreases aortic cholesterosis, and is effective as a lipotropic agent against the cholesterol-type fatty liver.

By contrast, the hypermetabolism-inducing agent dinitrophenol has little or no effect on plasma or tissue lipid levels. It is also ineffective as a prophylactic agent against cholesterol-induced atherosclerosis in the chick.

It is concluded that the effects of thyroid on lipid metabolism and atherosclerosis are not mere nonspecific by-products of the induced generalized increase in metabolic rate. Thyroid hormone and the lipids appear to be closely linked metabolically. The hormone apparently influences cholesterol metabolism and atherosclerosis via specific intermediate biochemical reactions in which it participates.

Cholesterol-induced atherosclerosis in the chick may develop with little or no increase in the hepatic total cholesterol concentration.

ARMSTRONG, J. B. & WHITE, J. C. (1950.) **Liquefaction of viscous purulent exudates by deoxyribonuclease.**—*Lancet.* **259.** 739-742. [Authors' summary copied *verbatim.*] **1786**

Some of the cytochemical characteristics of viscous purulent sputum are described, deoxyribonucleoprotein fibrils being an important constituent. Treatment of such sputum with deoxyribonuclease, an enzyme isolated from ox pancreas, reduced the number of these fibrils and made the sputum less viscous. A method of spray inhalation of this enzyme is described for patients with chronic chest infection. Clinical benefit was obtained with repeated inhalations containing 5 mg. of deoxyribonuclease a day. No toxic or anaphylactic reaction was encountered in the clinical studies.

POPPER, H., DE LA HUERGA, J., STEIGMANN, F. & SLODKI, M. (1950.) **Turbidimetric gamma globulin determinations in hepatobiliary diseases.**—*J. Lab. clin. Med.* **35.** 391-402. [Authors' summary modified.] **1787**

Gamma globulin elevation of different degrees was found in all types of hepatobiliary diseases studied. It was associated with the mesenchymal reaction characteristic of the various hepatic disorders which is expressed by proliferation of the Kupffer cells and histiocytes in the portal triads and which parallels the fibroplasia leading to cirrhosis formation. The gamma globulin elevation did not show any relation to the degree of jaundice nor to the ratio of cholesterol esters to cholesterol (as an estimate of liver cell damage).

The gamma globulin elevation is very marked in cirrhosis, especially when jaundice is present. It is less marked in acute toxic and infectious hepatitis but may persist in recovery when the other tests are already normal. A gamma globulin increase during the recovery period of hepatitis points to a transition into

cirrhosis. In all the conditions listed, the zinc sulphate turbidity reveals less consistent results.

In extrahepatic obstructive jaundice the gamma globulin is as a rule in slightly elevated amount whereas the zinc sulphate turbidity is below the upper limit of the normal. Therefore, only the latter test may be useful in the differential diagnosis between surgical and medical jaundice.

The relatively low zinc sulphate turbidity in obstructive jaundice is explained by the interplay of several depressing factors.

SCHMID, R. (1950.) **The zinc turbidity test and its clinical application.**—*J. Lab. clin. Med.* **36.** 52-65. 1788

There was no significant degree of correlation in the results of the zinc turbidity test and γ-globulin fraction values. When compared with other concurrently employed turbidimetric and flocculation tests in 164 patients, with clinical or laboratory evidence of liver dysfunction, the results of the zinc turbidity test were 34% positive in contrast with 50% using the thymol turbidity, and 39% using the cephalin-cholesterol tests.

—MALCOLM WOODBINE.

See also abst. **1580** (streptococcal infections of pigs)

POISONS AND POISONING

WILSON, R. H. & DEEDS, F. (1950.) **Importance of diet in studies of chronic toxicity.**—*Arch. industr. Hyg. Occup. Med.* **1.** 73-80. [Abst. in *Bull. Hyg., Lond.* **25.** 715. (1950), copied *verbatim*. Signed: E. L. COLLIS.] 1789

Evidence indicates that, while adequate nutrition generally protects against bacterial infections, it increases susceptibility to such virus infections as poliomyelitis. The presence or absence of various dietary factors may affect carcinogenesis, sometimes inhibiting, sometimes augmenting, sometimes having no effect. Diet may also affect toxicity; it can change the LD_{50} of thiourea for rats from 44 to 640 mgm. per kilogramme. Fats increase the toxicities of benzene, alloxan and DDT; and decrease the toxicity of cyanide. As little as 16 p.p.m. of cadmium in diet is known to produce bleaching of the incisor teeth in rats, while 31 p.p.m. may affect the teeth, blood and heart.

In the experiments now reported cadmium was used, and also xylose, thiourea, and acetaminofluorene (AAF) which produces malignant growths. Three diets, A, B and C, were given to rats. The crude analyses of these diets are shown without any reference to their vitamin content. The results are stated in detail; they indicated that diet A, as compared with diet B, greatly increased the toxicity of cadmium, and to a lesser extent that of AAF, while the toxicity of thiourea was unaffected; but with xylose the toxicities were reversed, and the rats on diet B were more severely affected. The conclusion of the matter is that a nutritional state that protects against one agent may increase susceptibility to another; and that in determining the toxic properties of any agent consideration must be paid to the diet of the animals used as indicators. No attempt was made to determine the substance or substances in the diets responsible for the differences observed.

BLAXTER, K. L. (1950.) **Lead as a nutritional hazard to farm livestock. III. Factors influencing the distribution of lead in the tissues.**—*J. comp. Path.* **60.** 177-189. [Author's summary copied *verbatim*.] 1790

Following the injection of lead into the vein of a sheep, it was found that the whole blood concentration dropped very slowly. The lead content of the corpuscles dropped at a slow exponential rate, while the lead content of the serum, although dropping initially much more rapidly, also declined very slowly.

It was found that in normal sheep and in sheep given small and large quantities of lead by mouth the cells accounted for 85 to 90 per cent of the blood lead. *In vitro* studies on cow blood indicated that the cells accounted for 63 to 70 per cent.

On the basis of ultra-filtration studies and the analysis of protein-free fluids from rabbits, it was concluded that very little of the serum lead is freely diffusable, the larger part being bound to the serum proteins.

The distribution of lead following both oral and intravenous administration was determined in the tissues of rabbits. It was found that lead when given intravenously as the acetate followed the distribution of the reticulo-endothelial cells of the body. When given by mouth, most of the lead was found in the skeleton with very high concentrations in the kidney. The carcase analyses of two sheep agree with this differential distribution.

With increasing oral dosage the amount of lead stored in the bones increased, but there was an indication that the bone cannot deal

with large excesses which are then deposited and cause damage in the kidney, particularly the cortex.

After the intravenous administration of lead, there was still 5 to 10 per cent. present in the tissues 59 days after the injection.

The results are discussed in relation to the factors causing the differential distribution of lead and its implication.

ALLCROFT, R. (1950.) **Lead as a nutritional hazard to farm livestock. IV. Distribution of lead in the tissues of bovines after ingestion of various lead compounds.**—*J. comp. Path.* **60.** 190-208. [Author's summary copied *verbatim.*] **1791**

Analytical data were obtained showing the normal concentration of lead in selected tissues and blood of cattle and sheep. It was pointed out that while the concentration of lead in the tissues was similar to that in the human being, the amount of lead in whole blood was considerably lower than in man.

When large quantities of lead were given to calves there was a marked and rapid rise in the blood lead level and if the animal survived the lead content of the blood did not revert to normal for many months.

Data on the concentration of lead in the blood stream have been used to compare the amounts of lead absorbed from various lead compounds by the calf. When given as the metal or the finely ground ore galena, lead was absorbed to a much smaller extent than when given as the acetate, the phosphate, the basic carbonate, the oxide and wet or dry paint.

Tissue concentrations of lead after ingestion of various lead compounds showed that the amount of lead in the kidney cortex was of specific diagnostic value.

Comparison of blood and faecal lead levels were made over a period of several weeks after ingestion of sub-lethal amounts of lead. It is pointed out that such a comparison is of considerable diagnostic value in cases of suspected lead poisoning in the living animal.

Experiments on attempted chronic poisoning of bovines with lead are presented. Relatively large quantities, 1 to 2 g. daily, were ingested over a period of two years without ill effect.

ALLCROFT, R. & BLAXTER, K. L. (1950.) **Lead as a nutritional hazard to farm livestock. V. The toxicity of lead to cattle and sheep and an evaluation of the lead hazard under farm conditions.**—*J. comp. Path.* **60.** 209-218. [Authors' summary copied *verbatim.*] **1792**

Experiments in which the lethal dose of lead for calves and sheep was investigated using various compounds, showed that in the case of young calves 0·2 to 0·4 g Pb. per kg. of body weight was sufficient to cause death in a few days. The fatal dose for older cattle and mature sheep was larger.

The symptoms of acute lead poisoning in cattle and sheep are described.

Field cases of acute poisoning are enumerated, and it is suggested that large numbers of calves die annually throughout the country as a result of the ingestion of toxic quantities of lead. Lead paint and painters' materials were the most frequent cause of death, but cases also occurred through contamination of feeding stuffs.

It has been shown by experiments on continued daily ingestion of lead that the very substantial dose of 8 mg. per kg. body weight may be tolerated for many months, and that a level of 6 mg. per kg. of body weight per day may be tolerated for even three years.

On the basis of a single experiment it is suggested that much smaller amounts of lead, 1 mg. per kg. per day, are sufficient to cause abortion in the ewe if ingested during pregnancy by animals in poor condition.

Pasture levels of lead are discussed, and it is shown that the ingestion of herbage contaminated with plumbiferous soil dust in certain areas can result in the ingestion of more than 130 mg. of lead for every kg. of dry matter consumed. The average annual ingestion of lead by sheep in the plumbiferous area of Derbyshire is high, the amount being much greater in winter than in summer. Lead in this form, however, is relatively non-toxic and the lead content of the blood of sheep in this area suggests that there is no real danger of any form of plumbism.

It is concluded that cumulative lead poisoning rarely, if ever, occurs in ruminants, and that in this respect ruminants differ from human beings.

Diagnosis of lead poisoning of the acute type is briefly discussed, and it is emphasised that an unequivocal verdict on analytical data alone, without collateral evidence, is often difficult.

DARRASPEN, E., TAPERNOUX, A. & VUILLAUME, R. (1950.) Contribution à l'étude de l'intoxication arsenicale chez le cheval. [**Chronic arsenical poisoning in the horse.**]—*Rev. Méd. vét., Lyon et Toulouse.* **101.** 281-293. **1793**

Three horses, 10, 4 and 12 years old respectively given daily doses of 0·24 g.; 0·36 g.; and 0·72 g. remained in good health from

March, 1947–20th August, 1949. They were then each given 1 g. arsenic daily during the first week, 2 g. daily during the second week and 3 g. daily during the third week,; this continuing in that order until the animals died. Death occurred after 14, 18 and 19 weeks respectively. The earliest symptoms were wasting and desquamation. Gastro-intestinal and nervous symptoms appeared suddenly, 3–5 days before death. On P.M. examination there was dehydration of the tissues, but abundant liquid in the alimentary canal and degeneration of the liver was observed. Most of the arsenic was excreted. The concentration in the liver was only 100–200 mg. per kg.—NESTA DEAN.

HOLZER, F. J. & STÖHR, R. (1950.) Eine Massenvergiftung von Schafen durch das Unkrautvertilgungsmittel Natriumchlorat (Natrium chloricum: $NaClO_3$). **[Mass poisoning in sheep by sodium chlorate used as a weed killer.]**—*Schweiz. Arch. Tierheilk.* **92.** 339-354. [English, French and Italian summaries, abst. from English summary.] 1794

After spreading sodium chlorate for the destruction of rhododendron on an alpine pasture, 84 head of sheep died. All had the syndrome of methaemoglobin formation. Methaemoglobin was absent from the foetuses of 27 ewes. In g. pigs and rabbits dosed *per os* with 1/320 of their body weight, in aqueous solution corrosion of the stomach developed but no methaemoglobin was observed in the blood. Sheep were killed with a dose administered by stomach tube of over 1 g. per kg. body weight. The meat from the poisoned sheep proved harmless for human consumption. [Tests were made on two sheep; doses of 2·4 or 1·65 g. per ng. were fatal.]

FADDOUL, G. P. & RINGROSE, R. C. (1950. **Avian keratoconjunctivitis. [Caused by ammonia vapour.]**—*Vet. Med.* **45.** 492-493. [Authors' summary copied *verbatim*.] 1795

Healthy chicks, four weeks old, were exposed to 0·1% ammonia gas for two weeks without apparent injury; the concentration of ammonia was then raised to 0·2% and at the end of two further weeks keratoconjunctivitis developed and became severe by the end of the fifth week. In a similar test on chicks, nine weeks old, similar results were obtained.

These findings confirm earlier observations concerning the possible effects of ammonia liberated from the litter, on chicks.

MEDOVY, H. (1950.) **Well water methaemoglobinaemia in infants.**—*Canad. med. Ass. J.* **62.** 228-230. [Abst. from author's summary.] 1796

M. discussed the development of methaemoglobinaemia in artificially fed rural infants as a result of the use of well water containing nitrates in the preparation of their food. He emphasized the need for official scientific examination of such water to ensure safety.

BLAKLEY, R. L. & COOP, I. E. (1949.) **The metabolism and toxicity of cyanides and cyanogenetic glucosides in sheep. II. Detoxication of hydrocyanic acid.**—*N.Z. J. Sci. Tech.* **31.** 1-16. [Authors' summary slightly modified.] 1797

It is unlikely that HCN reacts chemically in the rumen of sheep to any appreciable extent, except possibly in cases when sulphur compounds are administered per os. In sheep and human beings only very small amounts of administered KCN appear as HCN or cyanide in urine, breath and saliva. Blood concentrations of cyanide in sheep after dosing with KCN are low, receding from a maximum at about 15 min. after dosing to zero after about 5 hours. Serum thiocyanate reaches much higher concentrations and does not return to normal until 24–48 hours after dosing. Thiocyanate formation from cystine and HCN in presence of sheep liver extracts has been studied, and it is suggested that it may proceed through intermediate formation of α amino-β thiocyanopropionic acid. Thiocyanate synthesis from HCN in presence of liver extract occurs much more rapidly utilizing sulphide or thiosulphate in place of cystine. The presence of H_2S in the rumen and its rapid absorption suggest that it is probably the most important sulphur donor. Thiocyanate is excreted into the urine slowly over a period of several days. Recoveries of over 50 per cent have been obtained indicating that thiocyanate formation is the most important though not necessarily the only mode of detoxicatioin. No evidence is found for cyanhydrin formation by glucose with HCN in presence of serum or liver extracts.

SIMPSON, S. D. & YOUNG, L. (1950.) **The efficacy of various thiols as antidotes to lewisite.**—*Canad. J. Res.* Sect. E. **28.** 135-142. [Authors' summary copied *verbatim*.] 1798

The following thiols were tested for their effectiveness in counteracting the systemic toxic action of lewisite (β-chlorovinyldichloroarsine) in the rat: 1- and 2-mercaptopropane, 2-mercaptoethanol, 1,2-dimercaptoethane, 1,2- and 1,3-dimercaptopropane, 1,2,3-trimercaptopropane, 1,2-dimercapto-*n*-butane, 2,3-dimercapto-

propanol, 1,3- dimercapto-2-propanol, 2,2′-dimercaptodiethyl ether, 2,2′-dimercaptodiisopropyl ether, and 3,3′-dimercaptodipropyl ether. The toxicity and volatility of these compounds were also studied.

The tests of antidotal activity were conducted by applying the thiol to the skin at a site which had been dosed with approximately twice the LD_{50} of lewisite. Under these conditions the monothiols gave no evidence of antidotal activity whereas all the dithiols and the trithiol studied showed some activity. 2,3-Dimercaptopropanol (BAL) and its isomer, 1,3-dimercapto-2-propanol, were much more effective as antidotes to lewisite than any of the other compounds tested. Not only did 2,3-dimercaptopropanol show a somewhat higher antidotal activity than its isomer, but it was also found to be much less toxic.

VASHKOV, V. I. & SEREBRYAKOVA, E. K. (1947.) **[Data concerning toxicity of benzene hexachloride.]**—*Med. Parasitol., Moscow.* **16.** 41-43. **1799**

The toxicity of benzene hexachloride was studied on white mice, g. pigs and rabbits using suspensions and solutions in oil. In mice the solution was more toxic than the suspension whether administered orally or subcutaneously. Details of dosage are given.—J. JONAS.

RUTLIN, K. (1940.) Akutt muggforgiftning. **[Acute poisoning of farm animals by moulds.]**—*Norsk VetTidsskr.* **52.** 221-222. **1800**

R. stated that acute poisoning caused by mouldy fodder occurs frequently in Norway where farmers are not convinced of the danger of feeding such fodder, except in the case of horses. He described a fatal case in a mare which had just foaled and died in about four days. When it refused mouldy maize, the owner mixed the latter with good meal and persuaded the mare to eat it. A few days later it became very ill, with a high temperature and dirty yellow mucosae. Four or five similar cases in horses fed mouldy hay recovered. Comparable cases occur in cattle.—F.E.W.

LANGDON, R. F. N. (1950.) **Studies in Australian ergots. 1. *Claviceps pusilla* Cesati.**—*Pap. Dep. Biol. Univ. Qd.* **2.** No. 12. pp. 1-12. [Abst. in *Rev. appl. Mycol.* **29.** 566. (1950), copied *verbatim*.] **1801**

Claviceps pusilla is not uncommon in the latter part of the summer and in the autumn on a number of native grasses in Queensland. There may be considerable infection as early as January if storm rains occur in October. In areas where *Cerebella* [a saprophyte on ergot honey-dew secretions] is not found, abundant sclerotia may be formed, which act as reservoirs of inoculum to spread the disease in the following season. *Claviceps pusilla* may be regarded as a potential source of stock poisoning. Infection of the native pasture grasses for several years might result in pasture deterioration through failure of the natural seeding process.

The morphology, hosts, sclerotia germination, and infection experiments are described. Hosts detected in 1949 include *Veteveria filipes* and *Dichanthium annulatum*. There does not appear to be more than one strain of the fungus.

LEVENSHTERN, A. E. (1947.) **[Poisoning of ducklings by fungi.]**—*Veterinariya, Moscow.* **24.** No. 5. p. 42. **1802**

An account of an epidemic in ducklings that had fed on mouldy vetch seed from which *Aspergillus fumigatus* and *Fusarium* spp. were grown. Aqueous and alcoholic extracts of the mouldy seeds caused death in 2–3 min. when injected subcutaneously into mice.

The infected seed was harmless to ducklings after it had been boiled for 15–30 min.

—F.A.A.

SERGENT, E. (1948.) Les cailles empoisonneuses en France. **[Toxicity of the flesh of quails after ingestion of seeds of *Conium maculatum* or *Oenanthe crocata*.]**—*Arch. Inst. Pasteur Alger.* **26.** 249-252. **1803**

Two further cases of transient poisoning in a hunter and his wife, similar to those reported in Algeria [*V.B.* **14.** 171] and occurring in the Creuse district of France, were attributable to the ingestion of quails of which the flesh had been rendered toxic by the ingestion by the birds of hemlock (*Conium maculatum*) seeds. In another instance a man and his wife in the Cantal district had temporary toxic symptoms, accompanied by cutaneous lesions similar to those seen in cases of *Oenanthe crocata* poisoning, after eating quails, and it is thought that the flesh of these birds may have become toxic after ingesting seeds of *Oenanthe crocata*.—E. COTCHIN.

MUNRO, D. A. & LALL, J. M. (1949.) **Some effects of feeding white rats with "ratanjot" (*Onosma echioides*) in "vanaspati" and its pathological significance.**—*Indian J. vet. Sci.* **19.** 11-14. **1804**

An account of the results of feeding rats on ratanjot, a dye produced from the roots of *Onosma echioides* used to colour certain vegetable fats used as a substitute for ghee (clarified

butter). Those receiving high concentrations of the dye developed liver disease and it is assumed therefore that its use could be objectionable.—M. M. SINGH.

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections, see under the appropriate disease)

LEONOV, N. I. (1949.) **[Specific prophylaxis of infectious diseases of animals.]**—*Veterinariya, Moscow.* **26.** No. 10. pp. 11-14. **1805**

Disinfectants were discussed, attention being given to the use of antiseptics in vaccines. The possibility that enzymes inherent in the tissue cells may act in a manner similar to specific antibodies is referred to.—F.A.A.

LIENERT, E. (1950.) Die Pharmakotherapie der Pansentympanie mit besonderer Berücksichtigung der Pharmakodynamik des Tartarus stibiatus auf den Pansen. **[Treatment of tympany of the rumen.]**—*Wien. tierärztl. Mschr.* **37.** 634-644; 677-688; 758-768; & 873-891. **1806**

L. discussed the role of phosphatase in the aetiology of bloat and using isolated strips of rumen and ruminal contents showed that phosphatase was present in rumen tissue and in the saliva of cattle. Arsenates increased the activity of phosphatase. He suggested that atony of the ruminal wall is related to lack of glucose. Tartar emetic in concentrations from 1%–2·5% inhibited fermentation and was a peripheral stimulant. He sugested, however, that tartar emetic would not be a useful remedy for bloat because the dose required to operate on the volume of matter in the rumen would be toxic.—R. HADEK.

LEPPER, M. H., CALDWELL, E. R., JR., SMITH, P. K. & MILLER, B. F. (1950.) **Effects on anaphylactic shock of salicylates, aminopyrine and other chemically and pharmacologically related compounds.**—*Proc. Soc. exp. Biol., N.Y.* **74.** 254-258. [Authors' summary copied *verbatim.*] **1807**

Oral administration of salicylates and aminopyrine in rabbits decreased the incidence of death from anaphylactic shock. A number of compounds closely related, chemically or pharmaceutically, did not produce a similar inhibitory effect. The mechanism of action is not antihistaminic, nor does it appear to be related to characteristic pharmacological effects, *e.g.* antipyresis. It may represent a direct effect on the specific combination of antigen and antibody.

WATTS, W. E. & MATHIESON, D. R. (1950.) **Studies on lymphocytes from persons treated with radioactive iodine.**—*J. Lab. clin. Med.* **35.** 885-889. [Authors' summary copied *verbatim.*] **1808**

A study was made to determine whether or not the number and frequency of refractile cytoplasmic granules known to be present in 34 per cent of normal lymphocytes increase on exposure of the host to ionized radiation. A significant change in the number or frequency of the refractile granules in lymphocytes from persons exposed to ionized irradiation was not found. A search was made for other concise or specific qualitative cytologic effects of irradiation, but none was found. The refractile granules were best studied in fresh, unstained preparations by phase microscopy.

BROWNLEE, G. & SHORT, E. I. (1948.) **Estimation of phenanthridinium compounds.** [Correspondence.]—*Vet. Rec.* **60.** 143-144. **1809**

Tests were made for these compounds in samples of urine and blood.

Both phenanthridinium "1553" and "897" contain diazotizable amino-groups which form weak dyes with N-α-naphthylethylenediamine. In urine, the concentration should be within the range 0·5–2 mg. per 100 ml. for maximum colour-development, results being determined colorimetrically or absorptiometrically after 20 min. Recovery of the drugs from urine was 92–110%.

In blood the adsorption of the compounds, particularly "1553", by protein presents a special problem. This is overcome by using sodium chloride as a precipitant with the addition of acohol to prevent emulsification and aid separation. Recovery of the drugs from blood was 90–112%.—MALCOLM WOODBINE.

SPINKS, A. (1950.) **Absorption and persistence of antrycide.**—*Brit. J. Pharmacol.* **5.** 445-454. [Author's summary slightly modified.] **1810**

Antrycide methylsulphate is rapidly and probably almost completely absorbed. The maximal plasma concentration increases regularly with the dose. Antrycide chloride is rapidly absorbed when given in solution, but any part of it that is undissolved is left behind as a drug reservoir. An increase in dose above that involving the administration of solid as well as solution does not raise the maximal concentration in the plasma to any significant

extent. The quantitative difference between the two salts depends on the concentration of the dosing solutions. The methylsulphate was completely dissolved at all doses but the chloride at doses higher than 1 mg. per kg. was administered as a saturated solution (about 1 mg. per ml.) containing dispersed solid. The dissolved part of the chloride is absorbed as rapidly as the methylsulphate; the undissolved part is left at the site of injection.

If conveniently small volumes are injected there is no quantitative difference in mice between the two salts at low doses but in large animals such as calves there is a large difference.

Antrycide leaves the plasma rapidly during the first few hours after dosing. A concentration of 4,000 μg./litre falls below 10 μg./litre within 24 hours. It attains high concentrations in liver and kidney. Concentrations in eight other tissues examined were found to be low. It can be detected in liver and kidney for several weeks after administration. It is excreted in the urine in detectable amounts for several weeks after administration. It can be detected in urine, liver, and kidney for a longer period after chloride than after methylsulphate administration. The localization of antrycide in liver and kidney is probably only a minor cause of its persistence. The major cause is probably long-continued, slow absorption from a subcutaneous reservoir of sparingly soluble chloride. The substance measured by the analytical method (and referred to as antrycide above) is probably the active compound but proof that a metabolite is not included in the measurement has not yet been obtained.

ANON. (1950.) **Antibiotics in the U.S.A.**—*Lancet.* **259.** 105. **1811**

The U.S.A. is estimated to produce some 80% of the world's supplies of antibiotics, which now head the list, in value, of ethical drugs to the extent of about 20%. It is calculated that 30% of the cases seen by a doctor can be treated with antibiotics and that during 1948 approximately half the drug bill for New York hospitals was for penicillin and streptomycin.—MALCOLM WOODBINE.

TOPLEY, E., LOWBURY, E. J. L. & HURST, L. (1951.) **Bacteriological control of aureomycin therapy.**—*Lancet.* **260.** 87-89. [Authors' summary copied *verbatim.*] **1812**

The detection of aureomycin in burn exudates by a blotting-paper-disc-plate assay method is described. The sensitivity of this test was enhanced by using agar plates at pH 5·6 and incubating the test plates at 25°C. The method has the advantage of being applicable to 0·02 ml. quantities of contaminated fluids.

For testing the sensitivity of *Staph. aureus* to aureomycin, inoculation across a blood-agar plate with a ditch containing 10 μg. of aureomycin per ml. of agar at pH 5·6 is recommended. This method detects organisms resistant to 0·04 μg. of aureomycin per ml.

VOUREKA, A. (1951.) **Bacterial variants in patients treated with chloramphenicol.**—*Lancet.* **260.** 27-28. [Author's conclusions copied *verbatim.*] **1813**

Organisms obtained from the urine of patients receiving chloramphenicol treatment sometimes show profound morphological and cultural alterations, which may include loss of virulence, and may be lasting or transient.

The emergence of organisms with altered characters is important, in that the infecting organism, although still present, might escape observation. When they revert to the normal these variants may be responsible for relapses. They may also be significant in the detection of carriers.

BEDFORD, T. H. B. (1949.) **The tolerance of the dog to intrathecal injections of crystalline penicillin.**—*Brit. J. Pharmacol.* **4.** 329-332. [Author's summary copied *verbatim.*] **1814**

A study has been made of the effect of the injection of crystalline penicillin into the cisterna magna of the dog. The duration of the experiments was 6 hours except in a few instances, where it was 24 hours. The injection of 1,000 i.u. penicillin in distilled water did not produce symptoms of irritation of the nervous system, the number of polymorphonuclear leucocytes in the cerebrospinal fluid after 6 hours was no greater than after the injection of a similar volume of distilled water, and there was no rise in the pressure of the cerebrospinal fluid. No symptoms of irritation of the nervous system followed the injection of a similar dose of penicillin dissolved in 0·9 per cent (w/v) sodium chloride solution, although the cerebrospinal fluid contained a considerable number of polymorphonuclear leucocytes and its pressure was raised. Doses of penicillin greater than 10,000 i.u. invariably caused convulsions, and this also occurred when 10,000 i.u. were injected dissolved in sodium chloride solution. Convulsions, however, occurred in only one of twelve dogs when 10,000 i.u. were injected dissolved in distilled water, although there was evidence of irritation of the nervous system in every instance. A rise in the pressure of the cerebrospinal fluid never followed the injection of penicillin in distilled water.

The significance of these findings is discussed.

JAWETZ, E. & GUNNISON, J. B. (1950.) **The determination of sensitivity to penicillin and streptomycin of enterococci and streptococci of the viridans group.**—*J. Lab. clin. Med.* **35.** 488-496. [Authors' summary copied *verbatim.*] **1815**

Penicillin sensitivity tests were performed on seven strains of viridans streptococci, eighteen strains of enterococci, and three strains of *Str. sanguis,* using a tube dilution technique with frequent subcultures on solid media. With streptococci of the viridans group, the absence of visible growth after forty-eight hours indicates that all bacteria in the tube have been killed.

With enterococci, viable organisms are found in broth containing high concentrations of penicillin after many days of incubation at 37°C. The absence of visible growth does not indicate bactericidal but merely bacteriostatic action of the antibiotic.

Two of three strains of *Str. sanguis* occupied an intermediate position between enterococci and viridans streptococci with respect to penicillin sensitivity. They survived for a number of days in low (0·1 to 1·0 units per milliliter) but not in high (2 to 10 units per milliliter) concentrations of penicillin.

A zone phenomenon was frequently observed in sensitivity tests with enterococci. A certain penicillin concentration resulted in death of all organisms, whereas both higher and lower concentrations of the antibiotic permitted survival of enterococci for many days. No zone phenomenon was observed with the other streptococci.

The addition of streptomycin to penicillin resulted in synergistic action of the two antibiotics on enterococci. When combined, relatively small amounts of both drugs had a bactericidal effect.

The possible relationships between the in vitro observations and clinical findings are discussed.

BOLIN, F. M., EVELETH, D. F. & BOLIN, D. W. (1950.) **The use of water miscible vitamin A for lambs.**—*Vet. Med.* **45.** 451-452. [Authors' summary copied *verbatim.*] **1816**

The intramuscular injection of a water miscible vitamin A concentrate is followed by rapid increase in the serum vitamin A and storage of vitamin A in the liver of lambs.

BRAUDE, R. (1950.) **Stimulation of growth in pigs by iodinated casein and stilboestrol.**—*Brit. J. Nutrit.* **4.** 138-144. [Author's summary copied *verbatim.*] **1817**

In three experiments, twenty-one castrated male pigs which received 500 mg. iodinated casein and 30 mg. stilboestrol daily for 133 days grew faster and utilized their food more efficiently than control litter-mates.

In a fourth experiment, the daily dosage for each animal covered the range of 340-680 mg. iodinated casein and 20–40 mg. stilboestrol. Good response was obtained with the medium dose, 510 mg. iodinated casein and 30 mg. stilboestrol. The low dose appeared to be too low towards the latter part of the experiment, whereas the high dose was too high at the commencement.

Meat from treated animals was tested and found suitable for human consumption.

RICH, A. R., COCHRAN, T. H. & MCGOON, D. C. (1951.) **Marked lipemia resulting from the administration of cortisone.**—*Johns Hopk. Hosp. Bull.* **88.** 101-109. [Authors' summary copied *verbatim.*] **1818**

The daily administration of 7·5 mgm. of cortisone to normal adult rabbits kept on a balanced stock diet produces a marked degree of lipemia, with a rise in both the total fatty acids and total cholesterol of the serum, and striking deposits of visible fat in the liver. There is no constant parallelism between the degree of lipemia and the degree of glycosuria.

LONG, J. B. & FAVOUR, C. B. (1950.) **The ability of ACTH and cortisone to alter delayed type bacterial hypersensitivity.**—*Johns Hopk. Hosp. Bull.* **87.** 186-201. [Authors' summary copied *verbatim.*] **1819**

The ability of ACTH [adrenocorticotrophic hormone] and cortisone to alter delayed type bacterial hypersensitivity has been observed in 34 treated patients. The PPD (tuberculin) reaction was obliterated in 13, and the BHS (Beta hemolytic streptococcus) reaction obliterated in 19, of the 34 patients reported. In 7 of the 34 tuberculin tested and in 8 of the 34 streptococcus tested patients initial tests before treatment were not available. The time of obliteration of these reactions varied from 3 to 30 days and was affected by the patients initial degree of sensitivity, the dosage of hormone and the duration of treatment. Those patients in whom these reactions were not obliterated showed a significant alteration of the induration and erythema in one or both intradermal tests. Patients available for new intradermal tests after hormone therapy usually displayed a return of the ability to have positive PPD and BHS reactions 7 to 28 days after treatment.

Delayed type PPD and BHS reactions observed in 12 control patients during the same period showed wide variations in induration and erythema from week to week. Normal histamine reactions were observed in treated and untreated patients.

SIMMONDS, W. L. (1951.) **A comparison of methods for the evaluation of fungicides.**—*Z. Hyg. InfektKr.* **132.** 42-46. [In English. Author's summary copied *verbatim*.] **1820**

A method for the evaluation of water soluble fungicides against a single test organism, *Trichophyton mentagrophytes*, is proposed which shows a relatively narrow range of activity, sharp end points, and is consistent and reproducible with at least two fungicides which vary greatly in their fungicidal activity.

The data presented show that the point at which 50 percent of the sample exhibits growth, and the limits of the range of activity are extended in the American Public Health Association method over the corresponding value obtained by the procedure developed in this study.

It would appear that the method developed herein has overcome certain technical errors, eliminated any fungistatic effect caused by a residue of the chemical being evaluated in the viability test, and has eventuated in a technic, which because of its concise results may have wide application to the problem of the critical assessment of fungicidal agents.

KAYE, S. (1950.) **The use of ethylene oxide for the sterilization of hospital equipment.**—*J. Lab. clin. Med.* **35.** 823-828. [Author's summary copied *verbatim*.] **1821**

Since none of the methods currently employed for the sterilization of contaminated hospital equipment are satisfactory, either because they injure certain materials or fail to disinfect others, tests were made of the effectiveness and utility of ethylene oxide in the form of its 10 per cent mixture with carbon dioxide, known as Carboxide.

Hospital blankets and linens, both soiled and laundered, from which it was possible to recover large numbers of microorganisms, were completely sterilized by this treatment. The treatment itself is simple, requiring only an autoclave, a vacuum pump, a cylinder of the gas, and a rudimentary piping system, and is easy and convenient to perform. The expense is moderate and in some cases negligible in view of the results obtained.

See also abstr. **1579** (penicillin in mastitis); **1595-1599** (anti-tuberculous agents); **1600** (streptomycin in tuberculous meningitis); **1609** (streptomycin and other agents against Johne's disease); **1610-1611** (pyelonephritis in cattle and penicillin); **1614** (aureomycin and penicillin in swine erysipelas); **1629** (treatment of salmonellosis in ferrets); **1635** (brucellosis); **1646** (sulphamethazine in calf diphtheria); **1662** (suramin); **1633** (suramin and "arsocoll"); **1665** (sulphonamides in trichomoniasis); **1666** (*in vitro* effect of antibiotics on *Trichomonas foetus*); **1712** (hydroxylamine and Dengue fever); **1727** and **1732** (D.D.T.); **1733** (benzene hexachloride in mange); **1738** (hydatid disease); **1743-1744** (phenothiazine); **1798** (BAL); **1799** (toxicity of benzene hexachloride); **1801** (ergot); **1862** (bull semen dilutions containing streptomycin); **1886** (doping of racehorses); **1898** (book, acridines).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

THEOBALD, G. W. (1949.) **The rôle of the cerebral cortex in the apperception of pain.**—*Lancet.* **257.** 41-47 & 94-97. **1822**

T. elaborated his hypothesis on referred pain put forward in 1949.

Some observations on the sensitivity of female generative organs and other structures in the human abdomen are given, and these are of considerable comparative interest.

A study was made of the effect of applying faradic or galvanic current to the uterine body or to the cervix. The sensitivity of patients varied greatly when the current was delivered to the cervix, while the uterine fundus also was found to be sensitive. The reference of pain from the fundus and body of the uterus was identical with that from the cervix. The mildest degrees of pain could sometimes be relieved, but a point was ultimately reached at which pain persisted and was usually referred to the same cutaneous area despite local anaesthetization.

The theoretical implications of the above and of certain other clinical findings (including observations in hypnotized patients) are considered.—ALASTAIR N. WORDEN.

BARRY, G. T. (1950.) **Cytoplasmic proteins. A partial physical and chemical characterization of the cytoplasmic proteins.**—*Cancer Res.* **10.** 694-700. [Author's summary copied *verbatim*.] **1823**

Extracts prepared from two rat fibrosarcomas were examined by both physical and chemical procedures. The amount of nitrogen and phosphorus extracted and the nature of the electrophoretic patterns of the extracts were independent of the extraction media employed. Three clearly defined electrophoretic components were observed in the methylcholanthrene- and four in the benzpyrene-induced tumor extracts. The number of electrophoretic components, their mobilities, and their relative compositions were readily reproducible from preparation to preparation, and no changes in the electrophoretic patterns were detected when the

extracts were stored at −25°C. for 2 months. If kept at 0°C. the extracts were most stable at pH 7·8–8·0.

Electrophoretic patterns taken on plasma of normal and tumor-bearing rats were similar, except that for the latter animals a slight γ-globulin decrease was indicated. The relative compositions of the electrophoretic components found in the tumor extracts and in normal rat plasma were dissimilar, but several of the components had similar electrophoretic mobilities in both patterns.

The apparent complexity of the extracts and the incomplete electrophoretic resolution obtained suggest that other components are associated with each peak. Fractions were prepared by ammonium sulfate precipitation, and these were electrophoretically examined.

Polson, R. A. & Packham, E. A. (1950.) **A comparison of sternal and spinous process marrow.**—*Canad. J. Res.* Sect. E. **28.** 92-96. [Authors' abst. slightly modified.] **1824**

Confirming previous reports, a cytological study of the spinous process and sternal marrow showed a marked similarity in two groups of normal subjects. In each of 12 patients with various hematopoietic disorders samples were taken from the sternum and the spinous process. The marrow samples from the two sites were nearly identical. These findings suggest that the present knowledge of changes occurring in sternal marrow in disease may be applied to spinous process marrow.

Artioli, D. (1949.) Le alterazioni senili della milza negli equini. **[Changes in the spleen in horses caused by old age.]**—*Riv. Med. Vet. Zootec.* **1.** 285-318. **1825**

In 100 horses slaughtered at the Public Abattoirs, Parma, in 1948, 81 had lesions of the spleen, consisting of numerous petechial haemorrhages just below the capsule. Further examination revealed similar lesions in the trabeculae, usually at the junctions of connective strands. There was arteriosclerosis of the blood vessels, frequently accompanied by calcification in the walls of the vessels, and a considerable reduction in their lumina. The lymphoid nodules appeared to be enlarged. 64 of the affected horses were over 10 years old, and the remaining 17 between 5–9 years. There was chronic emphysema in 28, but this was also the case in one of the 19 in which the spleen was normal.—R. Macgregor.

Campbell, I. L., Hollard, M. G. & Flux, D. S. (1949.) **Thyroid weights of cattle.**—*N.Z. J. Sci. Tech.* **31.** No. 3A. pp. 29-34. [Authors' summary slightly modified.] **1826**

The mean weights and standard deviations of the thyroid glands of several classes of cattle in the Manawatu and Dannevirke districts have been determined and the mean weights have been compared with those published by the overseas workers. A more detailed examination has been made of the weights of calf thyroids collected in the Manawatu, North Island, in 1947. No significant difference between the mean thyroid weights of males and females was found. There was, however, a highly significant difference between the mean thyroid weights of calves from different collection districts.

Arzumanjan, E. A. (1950.) Nekotorye metodičeskie ukazanija k issledovaniju volosjanogo pokrova krupnogo rogatogo skota. **[Some methodical indications in the investigation of cattle hair.]**—*Dokl. Akad. seljskohoz. Nauk Lenin.* No. 5. pp. 17-21. [Abst. in *Anim. Breed. Abstr.* **18.** 249. (1950), copied *verbatim.* Signed: G. R. R.] **1827**

Factors affecting hair characters in cattle are discussed and methods of examining hair samples described On the stud farm "Istok" samples were taken from 14 Tagil, 15 Dutch, and from 10 Tagil and Dutch crosses. Samples were also taken from 17 Tagil on the collective farm "Pobeda". The samples were taken from an area of 4 cm.^{2}, and were weighed, counted, and measured for length and fineness. Except in fineness the indices for Tagil on "Pobeda" were higher than those for Tagil on "Istok"; the differences are attributed to differences in management and feeding. The indices (fineness excepted) for the Dutch were lower than those for the Tagil on "Istok"; those for the crosses were higher than those for either parent breed on "Istok" and slightly less than those for the Tagil on "Pobeda". There was a correlation between length and fineness. The samples examined did not contain any non-medullated fibres. The indices for hair characters (except fineness) were lower in cows which had calved once or twice than in 2-yr-olds, and lower in cows which had calved three times or oftener than in those which had calved twice.

Moch, R. (1949.) Zur Physiologie des Tränennasenganges der Ziege. **[Physiology of the naso-lachrymal duct in the goat.]**—*Dtsch. tierärztl. Wschr.* **56.** 390-392. **1828**

The length of the lachrymal canal in goats was found to vary from 0·9 to 1·3 cm. Pilocarpine injection increases the rate of flow of tears as does closure of the eyelids through

compression of the lachrymatory structures lying within the orbit.—J. A. NICHOLSON.

LICHSTEIN, H. C. (1950.) **Further studies on the biotin coenzyme.**—*J. Bact.* **60.** 485-487. [Author's summary copied *verbatim.*] **1829**

Data are presented to show that the biotin coenzyme is active in the stimulation of partially resolved oxalacetic and succinic acid decarboxylases as well as the deaminases of aspartic acid, serine, and threonine.

HITCHCOCK, M. W. S., KARVONEN, M. J. & PHILLIPSON, A. T. (1948.) **The effect of insulin on the acidity of the abomasal contents of lambs.**—*Commun. VI. Scand. Physiol. Congr., Oslo.* [Only abst. given. Abst. from abst.] **1830**

The effect of insulin hypoglycaemia on the acidity of the abomasal contents was studied, using unanaesthetized lambs provided with abomasal fistulae. A fall in acidity was observed although the total chlorides remained within normal limits. 26 simultaneous determinations of blood sugar and abomasal values, after intravenous injection of insulin, indicated a significant negative correlation ($-0{\cdot}66 \pm 0{\cdot}08$) between blood sugar and pH of abomasal contents and a significant positive correlation ($+0{\cdot}55 \pm 0{\cdot}11$) between blood sugar and total acidity. Vagotomy did not affect the response. The fall in acidity is considered to be caused by a suppression of HCl secretion.

—K. J. HILL.

POUNDEN, W. D. & GROSSMAN, J. D. (1950.) **Wall structure and closing mechanisms of the bovine teat.**—*Amer. J. Vet. Res.* **11.** 349-354. [Authors' summary copied *verbatim.*] **1831**

Dissection of the wall of the teat of the cow indicated that the connective tissue layer lying between the intermediate layer and the mucosa probably should be considered as a separate layer and not a part of the mucosa. From a surgical standpoint this means recognition of the following layers: the skin and the outer fibrous layer, the intermediate layer, the inner fibrous layer, and the mucosa.

Fixation of teats under sufficient internal pressure to simulate conditions of milk passing through the outlet of the lactiferous duct showed that the teat walls under such conditions became elongated and considerably thinner in comparison to resting states, an observation in agreement with the findings of others. Transverse folds sometimes became prominently visible, especially those at the proximal end of the teat cavity. In some teats, these folds were observed to be entirely separate from the glandular tissues, while in others, they were absent or closely united to them.

Rather similar recordings were obtained for the ante- and postmortem intramammary pressures which teats were able to retain without leaking. This was interpreted to indicate that muscle fibers under the control of nerve stimuli were unlikely to be responsible alone for maintaining closure of the outlet of the lactiferous duct. On the basis of the results of various examinations, four structures appeared to be involved in this operation; the muscle bundles, Fürstenberg's rosette, elastic fibers, and desquamated epithelial cells. Fürstenberg's rosettes and elastic fibers seemed to play roles at least as important as muscle bundles in milk retention. Milk remaining between the folds in outlets, and which could provide a pathway for growth of bacteria through teats, appeared to be least in outlets having relatively large quantities of desquamated epithelial cells present.

CAMPBELL, B., PORTER, R. M. & PETERSEN, W. E. (1950.) **Plasmacytosis of the bovine udder during colostrum secretion and experimental cessation of milking.** [Correspondence.]—*Nature.* **166.** 913. **1832**

Aseptic serial biopsies were made on the udders of three cows. An abundance of plasma cells were observed 8 and 3 days prior to parturition, on the day of calving and 4 days later. A biopsy 18 days after calving revealed no plasma cells. Late in lactation only a very small number of plasma cells were observed, but when milking was discontinued, 4 and 11 days later large numbers of plasma cells were present. When regular milking was again resumed 15 days later, only a few plasma cells were to be found. It can be concluded therefore that the plasmacytosis in the udder is synchronous with heightened periods of immune-body formation.—J. A. NICHOLSON.

KRUKOVSKY, V. N., LOOSLI, J. K. & WHITING, F. (1949.) **The influence of tocopherols and cod-liver-oil on the stability of milk.**—*J. Dairy Sci.* **32.** 196-201. **1833**

Using 16 cows of the Holstein, Brown Swiss and Guernsey breeds, the control ration was supplemented with 1 g. of mixed natural tocopherols, or with 28·35 g. of veterinary grade cod-liver oil, or with a combination of these.

The feeding of cod-liver oil supplements alone caused a decrease in the tocopherol content of the milk fat. When the supplements were fed together the average tocopherol level

remained the same as when the tocopherol was given alone. A highly significant correlation (+0·51) was found between the tocopherol content of the milk fat and the ability of milk to resist development of oxidized flavours during a storage period of seven days at 0°–5°C. The stability of the fresh pasteurized milk was improved when its tocopherol content was increased to 3,000 μg. per 100 g. fat and above, whereas milk containing fewer than 2,000 μg. tocopherol per 100 g. fat had poor keeping qualities in respect of the development of oxidized flavours. This milk could be improved, however, by destruction of its total vitamin C content.

In a further study involving 15 stall-fed Holstein cows it was found that ladino clover, hay and late-cut timothy hay were responsible for a decrease in the levels of the vitamins A and E of the milk fat. Bird's foot trefoil hay, however, resulted in appreciable increases.

It is concluded that differences in tocopherol content may account for the difference in the stability of winter and of summer milk.

—Alastair N. Worden.

Parrish, D. B., Wise, G. H., Atkeson, F. W. & Hughes, J. S. (1949.) **Properties of the colostrum of the dairy cow. III. Several factors affecting vitamin A and carotenoid content.**—*J. Dairy Sci.* 32. 209-221. **1834**

Eighty-six cows including both those of first and later lactation, of the Holstein, Ayrshire, Jersey and Guernsey breeds, were divided into groups, (1) "barn fed", (2) "Pasture supplemented" and (3) "vitamin A-supplemented", and subjected to two major feeding trials. Details of feeding are given.

Marked individual variations were encountered in the vitamin A potency of colostrum from cows of the same breed, lactation (*i.e.* first or later) and dietary group. Variability was greater in early colostrum than at the end of the transition period. In some instances first-lactation cows secreted an atypical colostrum of low vitamin A and carotenoid content. In general the concentration of vitamin A (but not of carotenoids) was higher in first-lactation cows than in those with later lactations. Access to pasture produced higher levels of carotenoids and, to a lesser extent, of vitamin A, in colostrum and transitional milk.

The concentrations of vitamin A and carotenoids in first-colostrum generally were several times higher than in transitional milk.

—Alastair N. Worden.

Sarkar, B. C. R., Luecke, R. W., Duncan, C. W. & Ely, R. E. (1949.) **The amino acid composition of bovine colostrum and milk.**—*J. Dairy Sci.* 32. 671-678. **1835**

A study was made, using micro-biological techniques on the concentration of isoleucine, valine phenylalanine, arginine, histidine, threonine, tryptophane, methionine and lysine in the colostrum and milk of one Holstein and five Jersey cows under winter feeding conditions, samples being analysed at 1 hour, 24 hours, 60 days and 90 days after parturition. The colostrum collected within one hour is higher in total protein than the 24-hour composite sample and therefore contains larger amounts of the ten amino acids. No essential difference was obtained in the amino acid composition of the proteins of milk collected at the 60th and 90th days of lactation. Analytical results are given in four tables.—P. H. Herbert.

MacLeod, J. & Ponder, E. (1946.) **Red-cell content of blood of the thoroughbred-horse.**—*Science.* 103 73. **1836**

A comparison was made between samples of blood from Thoroughbred and other horses; in one test five of each kind were used, the experimental results being recorded in two tables. The red cell count and haemoglobin content of Thoroughbreds are higher than the corresponding values in non-Thoroughbreds, the red cell count for which is 6–8·5 million. The cells of the Thoroughbred are smaller, the concentration of haemoglobin is a little less and therefore they carry less haemoglobin per cell, but of the two types of horses the Thoroughbred carries more haemoglobin per ml. of blood because there are more red cells per unit volume and this condition is probably a genetic characteristic.—E.M.J.

Rusoff, L. L. & Piercy, P. L. (1946.) **Blood studies of Louisiana dairy cows. II. Calcium, inorganic phosphorus, hemoglobin value, erythrocyte count, leucocyte count and differential leucocyte percentages.**—*J. Dairy Sci.* 29. 831-838. **1837**

Blood from cattle of three herds was examined at intervals of one month or two months over a period of two years. Two of the herds were better than average in feeding and management, the third was an experimental herd of low-producing animals on a basal diet, including poor quality hay. Blood from each herd was citrated and pooled, and examined for calcium, inorganic phosphorus and haemoglobin and erythrocyte and leucocyte counts and differential leucocyte counts were made. The results were subjected to analysis of variance.

There were significant differences in the calcium and phosphorus values between in-

dividual animals in a herd and in individual animals there were significant monthly variations. There were significant monthly differences in haemoglobin values in individual animals and in the leucocyte counts between individual animals. No general seasonal variation was found.

Significant differences were found between herds for haemoglobin, erythrocyte and leucocyte counts, and percentages of lymphocytes, neutrophiles and monocytes. In the experimental herd blood phosphorus and haemoglobin values were significantly higher than in the other herds.—A. G. SINGLETON.

SCHMITERLÖW, C. G. (1948.) **Depressor and pressor activity of extracts from the aortic wall of cattle.**—*Acta Physiol. Scand.* **15.** 47-56. [In English.] **1838**

Using the method described by Euler (1946) S. prepared extracts from the walls of the aorta of recently killed cows. He attempted to find the role played by the blood vessels in producing vaso-active substances. The depressor action appeared to be caused by histamine and the pressor action by a substance which in most cases behaved like nor-adrenalin, a demethylated adrenalin, and in others like adrenalin; this difference being caused by the presence of contaminating histamine. Traces of histamine, the depressor activity of which is masked by the pressor substance, may cause a liberation of adrenalin in the test animal sufficient to give a relaxation of the uterus.

—E.M.J.

NOVAZZI, G. (1950.) La calcemia materna e fetale nelle varie epoche della vita intrauterina e nel neonato a termine—ricerche nei bovini. **[The calcium content of maternal and foetal blood in cattle.]**—*Profilassi.* **22.** 119-122. [English and French summaries. Abst. from English summary.] **1839**

The calcium content of serum was determined in 33 cows at intervals during gestation, and in their 27 foetuses and six new-born calves. The serum calcium level was constantly higher in foetuses and new-born calves than in their respective dams.

DORNHURST, A. C. & SHARPEY-SCHAFER, E. P. (1951.) **A method of estimating the collateral resistance during obstruction of the main artery to a limb.**—*Lancet.* **260.** 81-83. [Authors' summary copied *verbatim*.] **1840**

Blood-flow and blood-pressure were measured in the forearm and hand, with the main artery open and occluded, in a resting state and during reactive hyperaemia. The data allowed the calculation of the resistance of the collateral vessels with the artery occluded. An example is given of a patient with osteitis deformans of one humerus in whom collateral resistance was found to be five times greater on the normal than on the affected side.

The method can be used for the study of limbs with occlusive arterial disease, provided local arterial pressure can be measured.

HOWELL, C. E. & CUPPS, P. T. (1950.) **Motility patterns of the cecum of the horse.**—*J. Anim. Sci.* **9.** 261-268. [Authors' summary copied *verbatim*.] **1841**

Motility studies of the cecum were conducted on a horse with a cecal fistula. The cecum appears to have a basic motility pattern which is modified by the presence of feed and water in the digestive tract. Different roughages modify the motility of the cecum and water exerts a pronounced influence on the activity of the organ. The patterns of activity suggest that the cecum acts as a reservoir for the partially digested feeds and its activity is coordinated to move ingesta on to the large intestine when more feed is eaten by the animal.

DOWNIE, H. G. (1950.) **Photokymographic studies of regurgitation and related phenomena in the ruminant.**—*Thesis, Cornell.* pp. 60. **1842**

The author has successfully adapted the photokymographic method to record the process of rumination and related processes.

—H. L. GILMAN.

HOFLUND, S. (1946.) Undersökningar över magarnas fysiologi hos spädkalv. **[Physiology of the digestive system in unweaned calves.]**—*Svensk VetTidskr.* **51.** 88-101, 122-134, 158-163 & 183-198. [Abst. from English summary.] **1843**

In calves with or without rumen fistula the pH value of the rumen contents decreased to about 6, from 1–3 hours after feeding more than 2 l. of milk; in calves a few days old given less than 2 l. it decreased by only 0·3 after about one hour, this decrease being brought about by regurgitation of whey from the rumen; in calves with permanent abomasal fistula, before feeding in the morning the pH value of the contents of the abomasum was 3·7, five min. after feeding it was 5·7–6·1 after which it gradually decreased until before the next feed when it was between 2·8–4·0.

The transference of fluid from the abomasum to the rumen and from the rumen to the abomasum was studied by filling first one and then the other with coloured water or milk. The transference of fluid in the different sections of the stomach determined, to a great extent, the

direction of the flow, but the degree of filling was probably not the only decisive factor. The fluid is probably transferred by active contraction in the different sections of the stomach. It has not yet been determined whether the degree of acidity in the different sections of the stomach can affect the sphincter in the orifice between the reticulum and the omasum.

The transference of the rumen contents to the abomasum is, to a great extent, obstructed by resection of all vagus branches to the omasum, probably on account of paresis in the omasum: the oesophageal groove reflex is not affected. Rumen tests before and five min. after feeding indicated that the oesophageal groove functioned when the pH values, the appearance of the specimens, and the percentage of albumin were alike in both tests, but it did not function when, although the pH value remained the same, the sample was milky in colour and not coagulated and the percentage of albumin had greatly increased.

When regurgitation was caused by the use of the stomach tube the after-feeding test indicated a decreased pH value but under these conditions it was impossible to make any estimation of the oesophageal groove reflex.

Details are given of the effects of feeding varying quantities of milk to calves in different conditions.

FRIEDMAN, M. H. F. & THOMAS, J. E. (1950.) **The assay and distribution of secretin.**—*J. Lab. clin. Med.* **35.** 366-372. [Authors' summary copied *verbatim*.] **1844**

A method for the assay of secretin activity on the anesthetized dog is described using dose-response curves for comparing the activity of the unknown with a standard preparation.

Secretin was found present throughout the whole length of the small intestine in the dog, with the greater concentrations occurring within the first 25 cm. from the pylorus. The differences in secretin content per unit weight of tissue from different regions of the intestine were found to be less than the differences per unit length.

SHAPIRO, S. K. & SARLES, W. B. (1949.) **Microorganisms in the intestinal tract of normal chickens.**—*J. Bact.* **58.** 531-544. **1845**

This is an account of the species and numbers of microorganisms found by a particular technique in the duodenum, ileum, caeca and colon of the domestic fowl. At hatching only few organisms were demonstrated but after feeding the numbers rapidly increased and the observations were continued up to one year of age. A statistical examination of the results was made and it is hoped that this will form a basis for assessing the biological significance of the intestinal flora of poultry, particularly in relationship to vitamin requirements.

—K. G. TOWERS.

WOLFSON, W. Q., COHN, C. & SHORE, C. (1950.) **The renal mechanism for urate excretion in the Dalmatian coach-hound.**—*J. exp. Med.* **92.** 121-127. [Authors' summary copied *verbatim*.] **1846**

The renal mechanism for urate excretion in the Dalmatian dog resembles that in birds. Urate is cleared at a rate considerably greater than the glomerular filtration rate, indicating that its excretion is the result of both glomerular filtration and active tubular secretion. The basic physiological mechanisms involved in the anomalous purine metabolism of the Dalmatian are indicated and their possible biological significance briefly discussed.

A new enzymatic method for the direct estimation of true urate in biological fluids is described, which does not require the estimation of total urate and urate chromogen, followed by the calculation of true urate as a difference.

PRAETORIUS, E. & KIRK, J. E. (1950.) **Hypouricemia: with evidence for tubular elimination of uric acid.**—*J. Lab. clin. Med.* **35.** 865-868. [Authors' summary copied *verbatim*.] **1847**

A case of hypouricemia (plasma uric acid 0·2 to 0·6 mg. per cent) in a 28-year-old white man is described. The plasma concentration of oxypurine uric acid precursors was considerably increased (5·1 to 5·2 mg. per cent against a normal average of 1·0 mg. per cent). The daily excretion of uric acid was within normal limits. The uric acid clearance was about ten times higher than the normal average and exceeded the simultaneously determined inulin clearance by about 50 per cent.

The findings show that in this case a renal secretion or formation of uric acid takes place.

MARSHALL, M. E. & DEUTSCH, H. F. (1950.) **Clearances of some proteins by the dog kidney.**—*Amer. J. Physiol.* **163.** 461-467. [Authors' summary copied *verbatim*.] **1848**

The clearance of the dog kidney of 5 proteins of varying molecular size has been studied. Conalbumin with a molecular weight of 87,000 did not appear in the urine. Ovomucoid and ovalbumin were cleared to the same extent in spite of the fact that ovomucoid has a considerably lower molecular weight. This may be due to the greater asymmetry of the ovomucoid molecule. Lysozyme, the smallest protein mole-

cule studied, was cleared more rapidly than the other egg white proteins. Anomalous results were obtained for the clearance of β-lactoglobulin. Its dependence on the serum concentration was much greater than were the clearances of the other proteins. The dependence of the clearances of the proteins on their serum concentrations suggests that tubular reabsorption of protein or complex formation with the dog serum proteins or both play a part in the elimination of the proteins. Definite evidence for the formation of a complex between lysozyme and the dog serum proteins was obtained. Such factors tend to obscure the dependence of protein clearance on the molecular size and shape of the molecule in question.

BERNARD, R. M. & ODELL, L. D. (1950.) **Studies on beta-glucuronidase activity in pregnant albino rats.**—*J. Lab. clin. Med.* **35.** 940-944. [Authors' summary copied *verbatim.*] **1849**

The activity of the enzyme, beta-glucuronidase, was determined in tissues and blood of female albino rats during pregnancy. An increase in the activity in serum, liver, and uterus was observed during gestation. A decrease occurred in ovary, homogenized fetus, and amniotic fluid. No changes of statistical significance were noted in spleen and kidney, or in the various other tissues assayed.

GEMMELL, J. P. & PERRY, W. F. (1950.) **The effect of adrenocorticotrophic hormone and surgical operations on iodine excretion.**—*Canad. J. Res.* Sect. E. **28.** 147-151. [Authors' abst. copied *verbatim.*] **1850**

Further investigations have been carried out on the previously reported increase in iodine excretion which occurs following the stress of surgical operations. By means of adrenocorticotrophic hormone it was demonstrated in four subjects that increased activity of the adrenal cortex does not of itself cause an increase in iodine excretion. In six patients subjected to elective surgical procedures it was shown with the aid of radioactive iodine that the inorganic iodide of the body tissues is not the source of increased iodine excretion which follows such operations. Other possible causes and sources of the postoperative increase in iodine excretion are discussed.

See also absts. **1586** (nucleic acid test in TB.); **1589** (effect of intravenous tuberculin on rabbit leucocytes); **1594** (nucleoproteins of avian tubercle bacilli); **1655** (nuclease production by streptococci); **1770** (biochemistry of vitamin function); **1899** (book, hormones).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

KALKBRENNER, A. (1949.) Die hygienisch-bakteriologische Beschaffenheit der pasteurisierten und bestrahlten Molkereimilch in einer hessischen Grosstadt. **[The hygiene and bacteriological quality of pasteurised and irradiated dairy milk in a large town in Hesse.]**—*Z. Hyg. InfektKr.* 129. 9-31. [Abst. in *Bull. Hyg., Lond.* 25. 295. (1950), copied *verbatim.* Signed: W. G. SAVAGE.] **1851**

The author carried out 32 examinations of the milk reaching two dairies in a large town after it had been treated and pasteurized. Both dairies employed flash pasteurization plants; at one plant the temperature was raised from 5° to 71°–74°C. in about 44 seconds, and at the other from 5° to 85°C. in one minute. After being cooled, the milk was irradiated [but details of this process are not given].

The results for the treated milks were uniformly bad. Plate counts (48 hours at 37°C.) varied from 40,000 to over 700,000. *Bact. coli* content (on the rather unsatisfactory basis of red colonies on Endo plates) was over 1,000 per cm. in all, with 59 per cent. over 10,000. Streptococci were found in large numbers in every sample and in over half of them haemolytic colonies were present. With cultural tests no tubercle bacilli were isolated. There is no mention of recording thermometers or means of time checking on the pasteurizers. Though the author admits that some of the bad results may have been due to faulty pasteurization, he considers that many may have been due to subsequent contamination.

HINDMARSH, W. L. (1949.) **The Cattle Slaughtering & Diseased Animals & Meat Act, 1902-47.**—*Yearb. Inst. Inspr. Stk., N.S.W.* 1949. pp. 32, 34-35, 37 & 39. **1852**

The present Act is a consolidation of the main provisions of other Acts passed during the past 100 or so years and is archaic. There is a brief historical account, comments on the duties of Inspectors of Stock under the Act and suggestions for alterations and amendments.

—H. McL. GORDON.

POSTMA, C. (1947.) De ouderdomsbepaling bij runderfoetus. **[Determination of the age of bovine foetuses.]**—*Tijdschr. Diergeneesk.* **72.** 463-531. **1853**

Because all cattle were registered in Holland during the second world war it was possible to

trace the owners of the 446 pregnant cows which were slaughtered at Amsterdam and used in the work now reported and to obtain the date of last service in the case of 161 animals. In 25 of these the date of service could not be accepted as accurate. The investigation was instituted because it was felt that the data on which the determination of the age of foetuses at abattoirs by meat inspectors, had been compiled from investigations conducted in other countries and dealt with breeds of cattle different from the Dutch black and white breed.

It is not always practicable in abattoirs to weigh the uterus and its contents in the case of pregnant animals to ascertain the amount to be deducted from the purchase price of the animal. It was essential that the determination of duration of pregnancy be based on readily recognizable external features of the foetus. P. concentrated on the length, weight and external characteristics of the foetus. He compiled what he considered the normal figures for various ages based on the data received from the owners of the dam after he had estimated the ages on the official data previously used at abattoirs in Holland. From a comparison he concluded that his findings made for a more accurate determination. By using his accepted normals it was possible in 90% of cases to judge the age accurately to within 15 days. Previously this was possible in only 77% of cases. In 65% (previously 44·5%) the age could be determined to within a week. He also furnished data whereby the weight of the embryonic fluids can be estimated when the weight of the foetus or of the uterus plus the membranes is known. This allows the determination of the weight of the uterus and its contents. Various other data given include: weight of foetus in relation to dressed weight of dam; age of foetus in relation to its length; influence of sex and type of soil on the relationship of age of foetus to its length and weight; influence of weight of dam on age and weight relationship in the foetus; weights of new-born calves in different parts of Holland during April and June 1944, etc. There are numerous graphs and tables and 29 drawings illustrating the external features in foetuses of different ages.—P. L. LE ROUX.

I. ANON. (1948.) Rapport du Service vétérinaire de l'Armée américane d'occupation en Allemagne (1947 - 1er trimestre). **[Report of the American Army Veterinary Corps in Germany, Jan.-June 1947.]**—*Bull. off. internat. Epiz.* **29.** 190-192. **1854**

II. ANON. (1948.) Rapport du Service vétérinaire de l'Armée américaine d'occupation en Allemagne (juillet-août-septembre 1947.) **[Report of the American Army Veterinary Corps in Germany July-Sept., 1947.]**—*Ibid.* 193-196. **1855**

I. The personnel of the service was always deficient and half the official posts were filled by practitioners with temporary appointments; but there were always sufficient private practitioners and, at times a surplus owing to the influx of refugees from the East. Livestock had to be reduced by about 50% owing to the drought. The disease position seemed to be improving, but foot and mouth disease occurred in all areas in spite of liberal use of vaccine. Swine erysipelas alone was on the increase.

II. A meeting of the British, French and American Veterinary Services was held on 25-26 August; the Soviet representative was invited but did not attend. In the American zone there was still a shortage of German officials and most of the posts were filled by temporary auxiliaries recruited from practitioners or retired persons. There were sufficient private practitioners. In Wurtemberg-Bade a slaughter policy for equine infectious anaemia had been introduced and 1,500 RM. had been paid in compensation. The severe drought necessitated the further reduction of livestock, and all cattle with open TB. had been slaughtered immediately and all reactors had been marked for slaughter before healthy animals. Vaccines were prepared for foot and mouth disease, contagious abortion of sheep, and fowl plague. Sheep scab, swine fever, bovine trichomoniasis and foul brood of bees (imported with foreign honey) had been on the increase, but other diseases had been reduced. An outbreak of milk-borne typhoid in man had been met by milk control and pasteurization. Control of meat had been more difficult owing to the amount of slaughtering as a result of drought, but some preserved meat had been seized because it had been insufficiently sterilized; included in this meat was some wild boar meat infected with trichinella. The German Veterinary Service, which guarded both the herds and the distribution of animal products to the public had suffered badly during the war, but was being rebuilt.—R. MACGREGOR.

CANTELLO, J. E. (1949.) **Flying doctor base—Shortwave Station 8SK. Veterinary Advisory Services on animal health matters from Broken Hill.**—*Yearb. Inst. Insp. Stk., N.S.W.* 1949. pp. 114-117. **1856**

This is a brief account of the inauguration of a veterinary service by the Department of Agriculture in western New South Wales,

associated with a short-wave radio station and the Flying Doctor Base. The contents of a veterinary medical chest recommended for stock owners in the region are listed. There are some comments on the diseases commonest in the region.—H. McL. GORDON.

KOROPOV, V. M. (1947.) **[History of early veterinary education in Russia.]**—*Veterinariya, Moscow.* **24.** No. 9. pp. 7-10. **1857**

In 1715 Peter the Great issued orders to start the training of "horse-doctors", both for civil and military work. In 1733 a veterinary school was established near Moscow with 50 selected boys aged 6–15 years old under foreign instructors. After early general education, they were taught languages, botany, pharmacy, with practical veterinary work in stables and in shoeing forges. The number of students increased with the years and, as veterinary knowledge widened, clinics were established. Individual veterinary tuition sometimes extended to 16 years.

How long this earliest European veterinary school lasted is not stated, but in the beginning of the nineteenth century the question arose of reviving specific veterinary training.—F.A.A.

See also absts. **1577** (coagulase test in staphylococcal food poisoning); **1592** (mycobacteria from sewage); **1624–1626** (*Salmonella* organisms from slaughter animals); **1628** (typhoid fever from ice-cream); **1872** (examination of milk samples); **1873** (cultivation of tubercle bacilli from milk).

LIVESTOCK HYGIENE

EVERIST, S. L. (1949.) **Mulga (*Acacia aneura* F. Muell.) in Queensland.**—*Qd. J. agric. Sci.* **6.** 87-139. [Author's summary slightly modified.] **1858**

Mulga is one of the most important fodder trees in Queensland and is recognized as the principal reserve of drought fodder for both sheep and cattle in much of the southwestern area of the State. The common variety is *Acacia aneura* var. *latifolia*. Four well-known growth forms of this variety are described and illustrated and the distribution of the species in Queensland is mapped. Climate, topography, soils and plant associations in the mulga regions are discussed. The fodder value, palatability and methods of using mulga, particularly in times of drought, are discussed and regrowth after different methods of treatment (lopping, felling, pushing over, etc.) is described.

See also absts. **1592** (mycobacteria from sewage); **1768** (green and dry summer pastures); **1773** (silage).

REPRODUCTION AND REPRODUCTIVE DISORDERS

VALERANI, L. (1950.) Alcune osservazioni circa l'epoca piu' favorevole per praticare la fecondazione artificiale durante il calore nelle bovine. **[Some observations concerning the most favourable time during oestrus for carrying out artificial insemination in cows.]**—*Zootec. Vet., Milan.* **5.** 532-539. [Abst. from English summary.] **1859**

During four years' work at the artificial insemination centre of the Spallanzani Institute, Milan, 3,442 inseminations were carried out. The most favourable time for insemination was at the height of oestrus. The highest fertility rate was obtained 12–30 hours after the onset of oestrus, the lowest during the first six hours of oestrus and later than 30 hours after its onset.—E.G.

VILJČINSKII, A. D. (1950.) Vlianie vremeni slučki kobyl na povyšenie ih zažerebljaemosti. **[The effect of time of service on increasing the pregnancy rate in mares.]**—*Konevodstvo.* No. 4. pp. 24-25. [Abst. in *Anim. Breed. Abstr.* **18.** 248. (1950), copied *verbatim.* Signed: G.R.R.] **1860**

In 1947 at the Lvov State Stud 5 (62·5%) of 8 mares inseminated at 8–10 a.m., and 7 (87·5%) of 8 inseminated at 6–8 p.m. conceived. Likewise at the collective farm "Kommunar" in the Chernigov Province 63·1% of 1040 inseminated at 8–10 am. and 72·2% of 72 mares inseminated at 6–8 p.m. conceived. Various other examples are given of mares inseminated in 1948 and 1949 showing the conception rate to have been 9·1–24·7% higher when the mares were inseminated in the evening.

VANDEMARK, N. L. & SALISBURY, G. W. (1950.) **The relation of the post-partum breeding interval to reproductive efficiency in the dairy cow.**—*J. Anim. Sci.* **9.** 307-313. [Authors' summary copied *verbatim.*] **1861**

A study of 1674 pregnancies in 593 cows of the University of Illinois dairy herd showed that: (1) A mean of 1·97 services were required per conception, and the mean post-partum in-

terval to first service was 117 days. The standard deviation of services per conception was 1·60 and of post-partum interval was 53·3 days. (2) Fertility increased with the length of the post-partum interval to first service up to 100 to 120 days. (3) In the cows bred less than 20 days after calving only 35 percent of the services resulted in conceptions, while nearly 58 percent of the services were effective in those cows bred 100 to 120 days after calving. (4) Reproductive efficiency for the cows first bred 120 to 200 days after calving remained fairly constant, but those first bred more than 200 days after calving required a slightly greater number of services per conception. (5) The simple correlation between the post-partum interval to first service and reproductive efficiency was not significant; however, a curvilinear relationship was indicated by the significant departure from linearity when the data were fitted to a curve by the use of a second degree polynomial curvilinear regression equation.

EASTERBROOKS, H. L., HELLER, P., PLASTRIDGE, W. N., JUNGHERR, E. L. & ELLIOTT, F. I. (1950.) **Fertility of diluted bull semen containing 100 micrograms of streptomycin per milliliter.**—*J. Dairy Sci.* **33.** 737-740. [Authors' summary modified.] **1862**

Streptomycin sulfate in the amount of 100 μg. per ml. was added to diluted bull semen used in the routine operation of an artificial breeding establishment on a split sample control basis for a period of 4 months; 2,340 cows were inseminated with the control semen, and 2,379 cows with semen containing streptomycin.

Over-all results showed a 61·1% nonreturn for the control group as compared to 69·8% for the streptomycin-treated group. The increase of 8·7% was found to be highly significant.

An inverse linear relationship between response and the initial level of fertility was noted even though most bulls of "so-called" high efficiency responded in some degree to treatment.

BLOM, E. (1950.) **Interpretation of spermatic cytology in bulls.**—*Fertility & Sterility.* **1.** 223-238. [Abst. from author's conclusions.] **1863**

In any careful study of semen, the percentage of primary sperm abnormalities must be taken into account. The percentage of spermatozoa having these primary abnormalities will be an important addition to knowledge of the physiological quality of semen and will complement evaluation of it by earlier methods of study such as sperm concentration counts, motility examinations, and viability studies. Experience with material from Danish bulls shows that diagnosis is improved when secondary sperm abnormalities and tissue cells other than spermatozoa are included in differential counts.

POLGE, C., SMITH, A. U. & PARKES, A. S. (1949.) **Revival of spermatozoa after vitrification and dehydration at low temperatures.** [Correspondence.] —*Nature, Lond.* **164.** 666. **1864**

Human spermatozoa appear to be the most resistant of spermatozoa when subjected to a temperature of −79°C., especially when semen is frozen in bulk, surface effects being deleterious to survival. Diluents containing glycerol (5% optimum) increased the proportion that survived; but in the case of fowl spermatozoa, however, 15% of glycerol was not only tolerated, but protected fully against vitrification (up to 10 weeks)—surviving samples proving indistinguishable from those of fresh controls. An experiment in freeze-drying fowl semen yielded up to 50% of surviving spermatozoa after reconstitution with added water. Experiments continue.—F. L. M. DAWSON.

DARCY, A. E. & PETERSEN, W. E. (1950.) **Isolation of ova from the living bovine.**—*J. Dairy Sci.* **33.** 797-802. [Authors' summary copied *verbatim.*] **1865**

A series of experiments was conducted to determine the possibility of recovering ova from the living cow. All surgical methods, such as transplantation of the ovary, resectioning the uterine horn and translocating the ovary subcutaneously, have yielded negative results. The method of inserting a catheter into the uterus of a cow in order to recover fertilized ova has proved impractical.

Instruments and techniques for recovering fertilized bovine ova without injury to the donor's reproductive tracts have been developed.

GARM, O. (1950.) Oversikt over seksualhormonene og den hormonelle regulering av seksualcyklus. **[Survey of the sex hormones and the hormonal regulation of the sexual cycle.]** — *Nord. Vet.-Med.* **2.** 622-641. [English and German summaries. Abst. from English summary.] **1866**

A survey of the mode of action of the sex hormones in so far as they influence the sexual functions. It is emphasized that the biological effect of one and the same gonadotrophic hormone may vary considerably, depending on the method of application and the point of time in the sexual cycle at which it is given. Further, it is pointed out that estrogens and progesterone

as well as estrogens and androgens may be both synergists and antagonists.

Thus, small amounts of estrogen will accentuate the effect of progesterone whereas large amounts of the same substance will inhibit the effect. On the other hand, progesterone exerts a corresponding effect on estrogens. Something similar applies to the relation between estrogens and androgens.

MAHAFFEY, L. W. (1950.) **Studies of fertility in the thoroughbred mare. I. Introduction. II. Early post-partum oestrus ("foal heat").** —*Aust. vet. J.* **26.** 267-273 ; & 295-300. **1867**

I. M. studied these problems extensively at the largest Thoroughbred stud in Western Australia, where during four years some 400 mares were available for reproductive studies and four stallions were in use. This introductory article comprises a general consideration of: fertility rates in mares recorded from various countries (it is concluded that the rate in Australia is probably about 50%); the phenomenon of oestrus and ovulation, including "silent heat", "split-oestrus" and heat without ovulation; the problems of, and factors commonly associated with infertility, and the procedure and methods of observation used at the stud under M.'s control. The extreme individuality in occurrence of oestrus and ovulation in the mare, compared with most other domesticated animals, is emphasized. Failure to make due allowance for this is considered a most important cause of the low reproduction rate among Thoroughbreds.

II. During 1948 and 1949 "foal heat" occurred at intervals ranging from 7–50 days after parturition; the duration of oestrus ranged from 1–12 days and ovulation, which was absent in several instances, usually occurred towards the termination of foal heat. The common practice of serving mares on the ninth day after foaling cannot be expected to succeed in more than 20–30%, according to M.'s observation; when the first *post-partum* service is related to the expected time of ovulation, only some 50% of conceptions are likely because some mares will be unfit for service and others will not ovulate at this heat; with selection of mares after ovarian palpation and examination of the genital tract, the conception rate may be raised to about 70% of those served. —D. A. GILL.

OLDS, D., MORRISON, H. B. & SEATH, D. M. (1950.) **Efficiency of natural breeding in dairy cattle.**—*Bull. Ky. agric. Exp. Sta.* No. 539. pp. 11. [Authors' summary slightly modified.] **1868**

Breeding records of the Kentucky Agricultural Experiment Station dairy herd were summarized for a period of 44 years. Included in the study were 435 heifers and 430 cows having a total of 1,746 pregnancies. Of 435 heifers bred, 51·7 percent conceived at first service. Six percent were classified as nonbreeders. Heifers 21-24 months of age had a higher conception rate than younger heifers. Of 1,357 first services to cows, 47·6 percent resulted in conception. After three services, 77·9 percent had conceived; 5·4 percent were classified as nonbreeders.

Only 29·4 percent of cows bred at less than 35 days after calving conceived at first service. The highest conception rate (55 percent) was obtained 50–75 days after calving. After 4 months or more, the rate dropped to 48·9 percent.

The average cows first came in heat 30 days after calving; 81 percent came in heat between one and six weeks. Of 121 cows which came in heat 1–18 days after calving, 44 had a second heat period in an average of 13 days. Of these 44 cows, 80 percent went 18–24 days before the next heat; only 3 had another short interval.

It appears that cows which come in heat in less than 18 days after calving may have another heat period within one or two weeks with no apparent abnormality. It was noticed that about 80 percent of these cows had a normal interval of 18–24 days before their next (or third) heat period. Only 38 percent of the cows and heifers failing to conceive came back in heat at the expected 18–24 day interval.

No significant correlation could be shown between the average number of services per conception of 91 dams with that of their daughters. In comparing the efficiency of 11 foundation cows with that of their female descendants, no significant correlation was found in services per pregnancy or number of calves. The highest conception rate was obtained with cows at their 4th or 5th pregnancy.

See also absts. **1588** (control of TB. by breeding); **1750** (hereditary eye cancer in cattle); **1751** (pink-eye gene of mice and susceptibility to fibrosarcoma); **1757** (oestrogen in relation to dietary effects on the liver of rats); **1768** (vitamin A and reproduction in ewes); **1771** (foetal death in rats resulting from vitamin A deficiency); **1774** (stilboestrol and cupraemia); **1817** (growth stimulation in pigs with stilboestrol); **1853** (age determination of foetuses); **1900** (book, artificial insemination); **1901** (book, genetics and animal improvement).

ZOOTECHNY

VAN DER PLANK, G. M. (1950.) Klimaat en veeteelt. **[Climate and cattle breeding.]**—*Hemera Zoa.* **57.** 139-146. [English and French summaries. Abst. from English summary.] **1869**

The author compares the observations of the mean monthly temperature and the air humidity in some places in Indonesia with those published by WRIGHT for London, Delhi and Karachi in connection with the breeds of dairy cattle which are kept there.

He emphasizes that in the low lying countries of Indonesia a crossbred Holstein-Friesian × zebu, will thrive better and produce more than pure-bred European cattle. In the mountains (Lembang-Bandung) the Holstein-Friesian is quite at home.

He discusses the desirability of using the Sindhi in East Java where, during the last 20 years, Holstein-Friesian cattle were crossed with crossbred zebu.

Research and registration are necessary to ascertain whether Sindhi zebu or zebu-Friesian cross-bred cattle are most suited to the tropical climate at sea-level.

HOBBS, C. S., HANSARD, S. L. & BARRICK, E. R. (1950.) **Simplified methods and equipment used in separation of urine from feces eliminated by heifers and by steers.**—*J. Anim. Sci.* **9.** 564-570. [Authors' summary copied *verbatim.*] **1870**

The construction of a metabolism unit of simple design and operation is described which provides for the quantitative separation and collection of feces and urine eliminated by steers and heifers. The unit including metabolism stall, equipment construction and operation is illustrated by labelled diagrams and photographs.

ANON. (1949.) **[Guide for veterinarians in the three-year animal husbandry plan.]**—*Veterinariya, Moscow.* **26.** No. 12. pp. 1-3. **1871**

There is emphasis on weakness in the control of disease as a result of ignorance on the part of owners and attendants.—F.A.A.

See also abst. **1901** (book, genetics and animal improvement).

TECHNIQUE AND APPARATUS

WILSON, C. D. & SLAVIN, G. (1950.) **A direct culture method for the examination of milk samples.**—*J. comp. Path.* **60.** 230-234. [Authors' summary copied *verbatim.*] **1872**

A method is described for the examination of milk samples for streptococci by direct sampling on to the surface of a selective medium. Screw capped jars with an absorbent pad are used, and in clinical cases material is also taken on the pad. The results obtained by this method have been compared with those secured by planting 0·1 ml. of milk on to blood agar and by streaking Edwards medium with gravity cream after preliminary incubation of the milk. For the final identification of *Str. agalactiae* a modification of the method first described by Christie and his co-workers has proved useful.

The introduction of this method has resulted in the number of samples examined at the laboratory being quadrupled while the cost of examining individual samples has been reduced to one quarter of the previous figure.

PATERSON, A. B. & WINMILL, A. J. (1950.) **Note on the use of Dubos medium for cultivation of *Mycobact. tuberculosis* from milk.**—*J. comp. Path.* **60.** 219-224. [Authors' summary copied *verbatim.*] **1873**

Oxalic acid is more efficient than trisodium phosphate for the destruction of contaminating organisms in milk suspected of containing tubercle bacilli. Dubos medium is more efficient than solid media for the isolation of tubercle bacilli from milk. Dubos medium fails to detect tubercle bacilli in samples containing minimal numbers of organisms. Possible reasons for failure are discussed.

KLIENEBERGER-NOBEL, E. (1950.) **Methods for the study of the cytology of bacteria and pleuropneumonia-like organisms.**—*Quart. J. mic. Sci.* **91.** 340-347. [Author's summary copied *verbatim.*] **1874**

Methods for the demonstration of the various cytological elements of bacteria are described. The specialized techniques applicable to pleuropneumonia-like organisms and L-forms of bacteria are also presented.

MANDELS, G. R. & SIU, R. G. H. (1950.) **Rapid assay for growth: determination of microbiological susceptibility and fungistatic activity.**—*J. Bact.* **60.** 249-262. [Authors' summary copied *verbatim.*] **1875**

A rapid and reliable manometric method has been devised which is particularly useful for determining the susceptibility of treated cotton, plastics, leather, wool, and other materials to attack by microorganisms. The method is also applicable for determinations of the fungistatic and bacteriostatic activity of compounds and, with simple modification, for determination of germicidal properties. The method is based upon a determination of growth as measured by oxygen consumption. The rapidity of the method is such that satisfactory measurements can be made in 24 or 48 hours.

HORNIBROOK, J. W. (1950.) **A useful menstruum for drying organisms and viruses.**—*J. Lab. clin. Med.* **35.** 788-792. [Author's summary copied *verbatim*.] **1876**

A suspending menstruum for drying bacteria and viruses has been described. It is efficient in preserving viability, readily available, nonantigenic and contains only lactose, citrates, and inorganic salts.

WEDUM, A. G. (1950.) **Nonautomatic pipetting devices for the microbiologic laboratory.**—*J. Lab. clin. Med.* **35.** 648-651. **1877**

A brief discussion of the common methods used in bacteriology departments to prevent infection by aspiration of infectious fluids through pipettes. For handling such material with the minimum danger of infection W. devised three types of non-automatic pipette (0·01 ml.–10 ml.) illustrations being given with a few details of their method of construction.—K. J. HILL.

WHITLOCK, H. V. (1948.) **A method for staining small nematodes to facilitate worm counts.**—*J. Coun. sci. industr. Res. Aust.* **21.** 181-182. **1878**

The worms, suspended in saline, water or formalin, are deeply stained by adding the requisite amount of a 30% aqueous solution of iodine. After a few min. the preparation is "decolorized" by adding a 5% solution of sodium thiosulphate drop by drop until only the worms remain brown. Worms may be stained *in situ* for demonstration purposes by inverting the bowel and dipping it first into this iodine solution for some min. and then into sodium thiosulphate to decolorize the mucosa.

A description with a diagram is given of a sampling pipette for counting small nematodes.—H. MCL. GORDON.

CIORDIA, H. & JOHNSTON, N. C. (1950.) **Rapid staining of nematodes for taxonomic studies.**—*Stain Tech.* **25.** 114. **1879**

The worms were fixed in Carnoy's fluid and a piece of Eye-Ease Hammermill Filler paper (certain dyes are used in making this paper) was inserted in the fluid. After dehydration the worms were mounted in Yetwin's medium and the cover-glass was sealed. It is stated that permanent preparations stained by this method may be stored without discoloration.—JAS. G. O'SULLIVAN.

LINDER, J. E. (1949.) **A simple method of staining the basement membrane of glomerular capillaries.**—*Quart J. micr. Sci.* **90.** 427-429. **1880**

A haematoxylin phosphomolybdic acid lake was described [Thomas, J. A. (1943)] which stains collagen and reticulin. L. found that when a sample of it had stood for over two months, a ripening process seemed to have taken place as a result of which the basement membrane of the glomerular capillaries took the stain. The technique is much simpler than those which are better known. Tissues must be fixed in formol mercuric chloride.

—L. M. MARKSON.

LHOTKA, J. F. & FERREIRA, A. V. (1950.) **A comparison of deformalinizing technics.**—*Stain Tech.* **25.** 27-32. [Authors' abst. copied *verbatim*.] **1881**

Five methods of removing bound formalin from tissues were studied with the Cajal, Del Rio-Hortega, and Feulgen technics used as indicators of efficiency of removal. The tissues had been fixed in 10% formalin for varying periods from one week to several years. The most effective means of eliminating the effects of formalin on staining was two 24 hour changes of 20% aqueous chloral hydrate. Tissue so treated (in the block) gave good results with both the Feulgen and Cajal technics. The Del Rio-Hortega silver carbonate method did not differentiate microglia and oligodendroglia, although astrocytes, unstained in untreated material, stained well after deformalinizing.

ROBINEAUX, R., LEBRUN, J., KOURILSKY, R. & DELAUNAY, A. (1949.) Sur un nouveau procédé d'obtention des leucocytes à partir du sang circulant. **[The collection of leucocytes from circulating blood.]**—*Ann. Inst. Pasteur.* **77.** 710-717. **1882**

Sedimentation of samples of blood at 37°C. was accelerated by the addition of a 3% solution of polyvinylpyrrolidone in the proportions of four parts human blood or two parts g. pig blood to one of solution respectively. The middle portion of the supernatant fluid was centrifuged, the sediment was washed with saline and a homogeneous suspension of leucocytes was obtained. From blood containing 6–

9,000 leucocytes per cu. mm. a suspension was obtained containing 20–30,000 leucocytes per cu. mm., the cells being viable and suitable for cytological and physiological research.

—K. J. Hill.

Verhagen, B. A. (1948.) **A simple quantitative calcium-formolgel reaction, and its connection with the euglobulin and gamma-globulin content of serum.**—*Acta med. scand.* 132. 265-282. [In English. Abst. from author's summary.] 1883

A reaction is described, based on the addition of a definite quantity of a mixture of equal parts of a specially prepared 12% calcium chloride solution and 40% formalin to a serum dilution series, this being used to assess the euglobulin content of serum.

Batterman, R. C. & Rovenstine, E. A. (1950.) **The use of ampin, an automatic ampule injector for routine and emergency hypodermic medications.**—*J. Lab. clin Med.* 35. 795-801. [Authors' summary and conclusion copied *verbatim*.] 1884

The practicability, ease of use, and safety of Ampin, a new automatic hypodermic device, were investigated over a six-month period. It was found to be a safe and practical method for the routine and emergency use of hypodermic medications. It was of particular value in the emergency first-aid room, ambulance service, and operating rooms. Its use not only eliminated many of the objections inherent in the accustomed syringe-needle techniques but also decreased the time the services of nurses were needed, thus freeing them for more important duties. It is concluded that the Ampin is the greatest advance in hypodermic techniques since the introduction of the syringe and needle.

Miller, G. L. (1950.) **A constant-level, boiling water bath.**—*J. Lab. clin. Med.* 36. 325-328. 1885

The apparatus consists of an electrically heated water bath supplied with distilled water from a double reservoir *via* interconnecting siphon tubes.—L. M. Markson.

See also absts. **1577** (coagulase test in staphylococcal food poisoning); **1578** (recovery of *Str. agalactiae* from outside the udder); **1586** (nucleic acid test in TB.); **1590-1591** (media for tubercle bacilli); **1593** (electron microscopy of avian tubercle bacilli); **1595** (chicks used for testing anti-tuberculous agents); **1623** (chromatinic bodies of *Bact. coli* and *Proteus vulgaris* demonstrated by phase-contrast microscope); **1634** (use of chick embryos for isolation of *Brucella*); **1639** (media for cultivation of *Br. abortus*); **1640** (swarming of *Cl. welchii* in semi-solid media); **1645** (histoplasmin collodion agglutination test); **1649** (phase-contrast microscopy and staining of *Treponema pallidum*); **1664** (phase and electron microscopy of *Leishmania tropica*); **1669** (extracellular cultivation of *Plasmodium lophurae*); **1703-1704** (tissue culture of agent of infective hepatitis); **1788** (zinc turbidity test); **1853** (age determination of bovine foetuses).

MISCELLANEOUS

Croisier, R. (1948.) Essai de definition du doping. [**Doping of racehorses.**]—*Thesis, Alfort.* pp. 68. 1886

Although the administration of drugs to act as a stimulant before racing dates further back, the term "doping" seems to have been introduced by American trainers about 1903 and was then defined as the administration to a horse a short time before a race, of certain substances capable of exciting the physical and nervous impulses of the animal, before and during the race, by an artificial action produced on the nervo-muscular system. The word "doping" originated from an old Dutch word, "doop", indicating any thick liquid used as a lubricant or excitant. This word then passed into the American slang vocabulary and finally took on its present form with its present meaning.

C. described the history of doping, both for horses and greyhounds and discussed the normal physiological effect of racing on the animal body.

The clinical effects of doping, before, during and after a race were described and the methods of introducing the drugs into the system, the commonest being subcutaneous or intramuscular injection, dosage *per os* or *per rectum*, by the insufflation of a finely powdered drug into the nose, intra-articular injection (only used in the case of lameness) and by application by friction on the skin (using cocaine or applying turpentine on the tendons or over the shoulders in cases of lameness).

Certain methods employed in doping were described, such as the use of excitants, anodynes, physical, chemical or physico-chemical means and by what were described as direct and indirect methods. Another chapter is devoted to what the author terms true doping and false doping and the dangers of the methods.

C. concluded that it is not possible to find a simple method for detecting doping and that the taking of saliva, a method employed habitually for tracing the use of certain dopes, seems to be insufficient for the suppression of the fraud.

—D. S. Rabagliati.

Harrison, J. L. (1949.) **The domestic rats of Malaya.**—*Med. J. Malaya.* 4. 96-105. [Abst. in *Trop. Dis. Bull.* 47. 614 (1950), modified.] 1887

Although this paper makes a special appeal to workers in Malaya it will be found interesting and instructive by the many medical men elsewhere who have been perplexed by the confusing nomenclature of rats and related animals.

The author describes the following, which are the six common house and field animals of Malaya popularly called "rats".

A. Rodentia: Muridae.

(1) *Rattus rattus* (Sp. *R. r. diardi; R. r. argentiventer; R. r. jalorensis*). (2) *R. norvegicus*. (3) *R. exulans*. (4) *Mus musculus*. (5) *Bandicota bengalensis*.

B. Insectivora: Soricidae.

(6) *Suncus caeruleus*, the musk shrew which is grossly slandered by being called a rat; it is an insectivore and the author states that there is no evidence of its being concerned in the transmission of any disease.

A clear description is given of the habits, external appearance, skull characters, and association, if any, with disease, of each of the above animals.

The animals chiefly concerned in the transmission of disease in Malaya are stated as being *R. r. diardi* (murine typhus), and *R. r. argentiventer*, (scrub typhus and probably leptospirosis). Plague is not occurring at present in Malaya.

ANON. (1948.) **The protection of workers from radiation hazards in atomic energy plants and other establishments using radioactive substances.** pp. 21. London: The Association of Scientific Workers for The Labour Research Department. 1s. **1888**

It is stated that, in general, there is a marked similarity between the effects produced at Hiroshima and Nagasaki on people who were some distance from the bombs, and those which could be produced in extreme cases by exposure on atomic energy plants. The effects upon the skin, the blood and the reproductive organs are briefly mentioned, and the conditions under which the danger may arise industrially are listed. Considerable quantities of external radiation may be produced by: (i) the operation of a pile, which gives rise to an enormous release of gamma-rays, beta-rays and neutrons; (ii) the large-scale handling of the by-products of the pile, where the danger is mainly from beta- and gamma-rays; (iii) general laboratory operations involving radio-active substances whether naked or enclosed in glass or metal vessels; and (iv) skin or clothing which is contaminated with active substances.

The precautions to be adopted are discussed briefly under equipment, dosage monitoring and medical control. It is recommended that the monitoring of dosage should be a full time job. The individual day-to-day dosages received by each worker in the course of his job can be checked regularly with the aid of a small portable apparatus which can be carried round by each worker concerned.

—ALASTAIR N. WORDEN.

ANON. (1950.) **Physical and biological effects of atomic explosions. From a correspondent.**—*Lancet*. **259**. 582-588. [Conclusions copied *verbatim*.] **1889**

A great deal can and is being done to shield the population from injury in this terrible form of warfare. But even so, there would be many casualties, especially if there were multiple attacks with more efficient bombs. The first-aid posts would be overrun at first with ambulant minor casualties from the fringe of the attack, and these people might well interfere with the handling of more serious cases arriving later. Amid all this turmoil there would be serious problems of morale and other difficulties, including feeding and housing refugees, working without main services, and tracing missing persons, down to the keeping of proper medical records and so on.

It is usual to end articles on this subject in an optimistic vein, calling for organisation to meet the peril and for general preparedness. No attempt has been made here to assess the medical burden of atomic warfare in terms of hospital beds, miles of bandages, bottles of plasma, and the number of doctors required. Those interested in such statistics can make their own computations from the data given. Those who do so will find it difficult to remain optimistic when their calculations are finished.

BOWERS, J. Z. (1951.) **Acute radiation syndrome. A problem for practitioners.**—*J. Amer. med. Ass.* **145**. 63-65. [Author's summary copied *verbatim*.] **1890**

The pertinent information that has been presented may be summarized as follows: The acute radiation syndrome is caused by sudden exposure to the penetrating radiations liberated by the atomic bomb. The resulting changes depend primarily on the inherent sensitivity of the exposed tissues and the type of radiation and are attributable to damage to the blood and the blood-forming organs, the blood vessel endothelium and the bowel. The particular tissues all show a tendency toward ultimate regeneration, and it is on this fact that present therapeutic programs are based. The primary manifestations are hemorrhagic diathesis,

nausea, vomiting and diarrhea and depression of the formed elements of the body. Treatment is at this date supportive in nature.

RULLIER, J. (1948.) Le laboratoire du praticien vétérinaire. [**A veterinary practitioner's laboratory.**] pp. 176. Paris: Vigot Frères. Fr. 350. **1891**

The object of this book is to describe laboratory procedure for veterinary practitioners. Selection has been confined to simple techniques with a view to the practical requirements of diagnosis.

The book is divided into two main sections, the laboratory itself and a formulary of laboratory processes. This latter part is subdivided into sections dealing with blood, pus, milk, urine, faeces, sputum, skin and fur and a miscellaneous section, comprising pregnancy tests, poisons, meat, water and biological tests. The study of each material is dealt with under physical, chemical and microscopic examinations, with tables and diagrams to assist the practitioner, and notes on the conclusions to be drawn from findings.

Criticism might be made of the form of presentation. It is not easy to refer to any particular technique without perusal of a section as a whole. All round this is a very useful book and it should be of considerable value to the general practitioner.—G. V. LAUGIER.

POLYAKOV, A. A. (1949.) [**Veterinary propaganda among the masses.**]—*Veterinariya, Moscow.* **26.** No. 12. pp. 4-7. **1892**

A general account of propaganda work done.—F.A.A.

REPORT

SOUTH AUSTRALIA. (1949.) **Eleventh Annual Report of the Council of the Institute of Medical and Veterinary Science, July 1948 - June 1949.** pp. 24. Adelaide: K. M. Stevenson, Govt. Printer. **1893**

Considerable work was carried out on PSITTACOSIS, particularly in the application of a complement-fixation test.

ATAXIA was seen in lambs after tail docking. From one case a haemolytic staphylococcus was isolated from the mid-brain; from a second case an organism resembling *Erysipelothrix* (*Listeria*) *monocytogenes* was isolated from the same region of the brain.

Studies on types of *Salmonella* in Australia were continued. *S. typhi-murium* was commonest; *S. bovis-morbificans* was next. Numerous strains of *S. anatum* were recorded from animal sources in Queensland.

Studies were begun on the effect of maternal VACCINIA infection on mouse embryos.

Cases of Q FEVER occurred in the laboratory where the virus was being investigated, and in a neighbouring laboratory.

Investigations were carried out on vitamin excretion, snake venom and liberation of histamine from perfused liver, lung histamine and injury (with special reference to age differences in g. pigs as a parallel with the observation that infectious disease seems to affect young age groups of children from 4–10 years more lightly than young adults or small infants), gastric acid and allergy, new anticoagulant from perfusate of mammalian liver, kidney and lung, prothrombin test in clinical medicine, and intravascular thrombosis.

Veterinary research included observations on the "normal" or average bacterial flora of pigs, microbiological assay of nicotinic acid in tissues of pigs (some details of the technique and difficulties are given), serum calcium levels in cattle following injections of calcium borogluconate, and dyspnoea in sheep associated with a sinusitis presenting a histopathological picture resembling that seen in chronic allergic rhinitis in man.—H. MCL. GORDON.

BOOK REVIEWS

BIGGER, J. W. [M.D., Sc.D. (Dublin), F.R.C.P. (London), F.R.C.P.I., D.P.H., M.R.I.A. Professor of Bacteriology & Preventive Medicine, University of Dublin.] (1949.) **Handbook of bacteriology for students and practitioners of medicine.** pp. xv + 547. London: Baillière, Tindall & Cox. 6th Edit. **1894**

The author set out to give all the more important facts relating to bacteria as they affect man, having particularly in mind the requirements of students of human medicine (whose expressed dissatisfaction with the larger "heavy weight" textbooks had first led the author to undertake the task of writing the book), and also of the medical practitioner who had not specialized in bacteriology That the book was successful was evidenced by the publication of the fifth edition within 15 years of the first [*V.B.* **10.** 154]. For this sixth edition, the author has made the most complete revis-

ion the book has so far received. Two chapters have been added, and 11 completely re-written, and considerable additions, deletions or alterations have been made throughout. The text pages now number 535 as against 455.

—E. COTCHIN.

MANSON-BAHR, P. H. [C.M.G., D.S.O., M.A., M.D., D.T.M., H. Cantab., F.R.C.P. Lond. Past President of the Royal Society of Tropical Medicine & Hygiene, London, and the Medical Society of London.] [Edited by.] (1950.) **Manson's tropical diseases. A manual of the diseases of warm climates.** pp. xiv + 1136. London, Toronto, Melbourne, Sydney & Wellington: Cassell & Co. Ltd. 13th Edit. 45s. **1895**

The 13th edition of this textbook needs no recommendation. For more than 50 years it has been indispensable to medical men and of the greatest help to veterinarians in the Tropics. This edition is of special interest as it incorporates so much of the new knowledge which has been amassed during and since the second world war. Such things as new aspects of the life cycle of *Plasmodium*, new synthetic drugs for malaria and trypanosomiasis, new antibiotics, and new insecticides are all included.—M.C.

ABDERHALDEN, R. (1950.) Grundriss der Allergie. Theorie und Praxis. **[Guide to allergy.]** pp. 179. Basel: Benno Schwabe & Co. Sw. Fr. 14.50. **1896**

This book which is intended as a guide for quick reference purposes for medical practitioners and students gives an outline of the principles and problems of allergy in theory and practice There are two main parts dealing respectively with the history and general aspects of allergy and with allergic shock, allergic diseases of the respiratory, digestive, circulatory, nervous and urogenital systems and on skin and eye allergies. Tables giving the concentration of allergens for skin tests and eight diagrams are included in the text. Numerous references are given after each chapter. Paper and print are of good quality.—E.G.

CRAPLET, C. (1950.) L'alimentation du bétail. **[Animal nutrition.]** pp. 275. Paris: Vigot Frères. Fr. 1200. **1897**

The book is divided into four parts dealing with the general principles of nutrition, the foodstuffs, the nutrition of the various species of domestic animals and birds and lastly with nutritional diseases. The method of approach will recommend itself to the student and the livestock breeder. The biggest section is that dealing with the feeding of the various species of animal with chapters on the horse, the dairy cow, calves, beef cattle, sheep, pigs and poultry.—M.C.

ALBERT, A. [D. Sc. (Lond.); Ph.D. Medicine (Lond.); B.Sc. (Sydney); F.R.I.C. Prof. of Medical Chemistry, the Australian National University, Canberra.] (1951.) **The acridines. Their preparation, physical, chemical and biological properties and uses.** pp. xiii + 381. London: Edward Arnold & Co. 70s. **1898**

This valuable book provides a store of information on the history and development of the use of acridine and its derivatives, discussing the value of such compounds not only as dyes of fabrics, but also on account of their outstanding fluorescent properties, as indicators for the titration of dark coloured solutions under ultra-violet light and as stains in fluorescence microscopy. The author has presented a critical and orderly summary of the physical, chemical and biological data scattered through the extensive literature and has drawn attention to the inter-relation of certain of these properties.

The first eight chapters are concerned with the methods available for synthesis. The middle third of the book is devoted to the presentation of the physical and chemical properties of acridine and its principal derivatives, including atebrin, rivanol, entozon, acriflavine, etc. The last third of the book, and this will probably be of greatest interest to veterinarians, deals with the biological properties and the medical and other uses of acridines. In this section, chapter XVII covers the utilization of acridines in clinical medicine under the headings (i) General review of the Field; (ii) Antibacterials; (iii) Antimalarials. In this general survey mention is made of diseases caused by several protozoan parasites, *e.g.* malaria, coccidiosis, amoebiasis, trypanosomiasis, but a curious omission is the failure to give an account of the use of acriflavine in treatment of piroplasmosis in cattle.

The author admits that existing knowledge does not yet enable a clear picture to be presented of the mode of action of acridine antimalarials.

There is a reference and author index, a subject index and an index to preparations. Although much of the subject matter is perhaps mainly of interest to organic chemists, it is set out so clearly that the book should be of great value to all research workers interested in chemotherapy of acridine compounds both in the study of molecular structures of such drugs in regard to the biological and therapeutic action and also as a source of reference. The book

is well bound and the printing and paper are excellent.—E.M.J.

HAMBURGER, C. (1950.) Hypofysens, Kønskirtlernes og Binyrernes Hormoner. **[The hormones of the pituitary body, the genital organs and the adrenal glands.]** pp. 184. København: Ejnar Munksgaard; Oslo: Olaf Norlis Bokhandel; Stockholm: A. B. Nordiska Bokhandeln. Dan. kr. 15.-. **1899**

This monograph, now in its second impression, was based on a series of lectures under the auspices of the Danish society for research on rheumatic diseases. The main purpose was to show the significant progress recently made in regard to the chemistry and biology of the adrenal cortical hormones, but because the latter are so closely related with the sex hormones, these have also been dealt with.

The anterior pituitary hormones are reviewed in a section of 40 pages and the steroid hormones in another of 106 pages, the third section dealing with the reciprocal action between the pituitary gland, the sex organs and the adrenal glands. Disease conditions and clinical use of preparations of gonadotrophin, ACTH and testosterone, and of cortisone are included.

There are 191 references and a subject index.—F.E.W.

BLOM, E. (1950.) On bedømmelsen af tyresperma. Specielt med henblik på anvendelsen ved den kunstige saedoverføring. **[On the evaluation of bull semen with special reference to its employment for artificial insemination.]** pp. 223. København: Carl Fr. Mortensen. Kr. 20. [English summary.] **1900**

The author has provided a well considered and executed treatise. More than half is based upon new original research; the remainder takes into account previous papers by the author and his associates as well as the work of others.

His new work was carried out on 100 normal bulls from artificial insemination centres, 20 rather subnormally fertile, 53 genitally diseased and 2 experimental bulls. In these latter testicular degeneration was induced by applying a heat-insulating bag to the scrotum. The first sign was with the dehydrogenation time (methylene blue reduction test) which became prolonged beyond the normal, not exceeding 16 minutes as a general rule. A clear distinction is for the first time drawn regarding sperm morphology between primary abnormalities and secondary ones due to prolonged storage in the accessory organs. In the new material no bull had more than 20% primary abnormalities unless this finding was paralleled by reduced fertility or definite genital pathology. The determination of pH is held to be a poor guide to physiological semen quality, but helpful in indicating the condition of the seminal vesicles, since it appears that an increase to a figure of 7·0 or over usually indicates vesiculitis. Seen through British eyes the devotion of considerable space to brucellosis in "public" bulls seems odd. Most of the inflammatory conditions in the diseased bulls were so associated, which diminishes the interest of this part of the work for readers in the U.K. The agglutination test on sperm plasma is esteemed highly, as in a more general sense is the author's brom-thymol-blue catalase test, which gives a catalase value of over 300 when pathological secretion is mixed with the semen. Apart from the aspect of the impact of recognized bacterial infection, the author's criteria to determine what constitutes a serviceable ejaculate for insemination purposes, are probably the most authoritative yet published, derived as they are from a broad and solid basis of experimental data. Determinations are based on dehydrogenation time, initial motility by the author's rough, rapid method, and primary sperm abnormalities. Weight is attached to Lagerløf's pronouncement that the secondary abnormality of a proximal droplet indicates poor fertility if it is present in more than 3% of the cells.—F. L. M. DAWSON.

LERNER, I. M. (1950.) **Population genetics and animal improvement as illustrated by the inheritance of egg production.** pp. xviii + 342. Cambridge: The University Press. 30s. **1901**

This book has been written for research workers, teachers and advanced students of genetics in relation to breeding.

The fowl and the improvement of its egg-laying capability is the experimental material, but the book is not written only for those interested in the problems of breeding fowls, it will be of value to those concerned with improvement of all species of domestic animal.

Qualities of commercial value seldom depend upon single hereditary factors; most often they have a multifactorial type of inheritance and it is with such problems that this book is mainly concerned. One of the qualities which is of commercial value is resistance to disease and several pages are devoted to this especially in connexion with the fowl paralysis complex of diseases. It is of interest to note that the author doubts, not the possibility of breeding disease resistant strains, but the efficiency of the method, and expresses the opinion that "so long as effective control measures are available, eradication programmes based on breeding techniques offer little promise of utility".—M.C.

HEDIGER, H. [Director, Zoological Gardens, Basle.]. [Translated by G. SIRCOM.] (1950.) **Wild animals in captivity. An outline of the biology of zoological gardens.** pp. ix+207. London: Butterworths Scientific Publications. 35s. **1902**

It is perhaps not an exaggeration to say that this is one of the most important biological monographs published in this country since the end of the second world war. The general public can read it with profit, but for zoologists and veterinarians it provides a wealth of information. The lucid and documented evidence relating animal behaviour and reactions in the wild state to those observed in captivity cannot fail to prove of value to those whose main concern is the domesticated animal. It is probable that a study of the methods outlined by the author will lead to further increases in the number of species adapted successfully to laboratory life.

In the earlier chapters the animal in the wild state is dealt with. Contrary to popular belief, the wild animal has, in the vast majority of cases, relatively little freedom. Food supply, enemies, climatic conditions and terrain all serve to delimit territory, and in some cases the restrictions placed upon "free-living" species are remarkably strict. Even the large birds and beasts of prey range widely not from choice but from need to ensure their food supply. Evidence is given that such restrictions are carried over into confinement.

In the remaining chapters the importance of different environmental factors in relation to well-being in captivity are discussed. Of great importance, in many cases, is the provison of environmental conditions that permit of normal feeding and mating patterns.

An excellent example of successful adaptation to captivity is the common European hare, *Lepus europaeus pallas*, which for many years could not be made to breed. The difficulties were due in part to coccidiosis and in part to psychological considerations linked with unsuitable living quarters. Detailed illustrations are given of the type of back-to-back hutch developed at Basle for breeding hares. Following successful breeding it was established that the exact duration of pregnancy was 42 days. It was noted further that superfoetation was a frequent event.

There are some interesting observations upon disease in captive wild animals, but all will agree with the author's statement on p. 119, *viz.* "It is a pity that lack of coordination still compels every zoo veterinary surgeon to find out so much for himself".

Veterinary surgeons who do not have to deal with animals in zoological gardens will find of technical interest the illustrating description of pinioning (pp. 48-52) and the description of the ground as a factor in hoof-wear and in the speed of infection (pp. 92-97).

It is to be hoped that this work will be read by all veterinary surgeons and by all who have to deal with problems of maintenance of captive or laboratory animals.

—ALASTAIR N. WORDEN.

BENDZ, G. (1950.) Latin för medicinare. **[Latin for medical students.]** pp. 473. Lund: C. W. K. Gleerup. Kr. 100. **1903**

The quotation from Linnaeus on the title page: "Nomina si nescis, perit et cognitio rerum" is the key-note of this text and reference book intended for students of the various branches of medical science as a complement to the terminological dictionaries. In Sweden it has been possible since 1907 to enter upon the study of medicine without any previous knowledge of Latin, so this exposition of medical Latin as a living language should be warmly welcomed in that country.

There is a critical bibliography of 15 pages on medical Latin, general and specialized Latin textbooks, anatomical terminology, the terminology of clinical pathology and bacteriology, and that of pharmacology. Special attention is given to pronunciation, syllabification and accentuation. It is characteristic of the book that numerous "live" examples are given from the start, which should stimulate the student's interest. There is an index of 60 pages.

The last three chapters are entitled: Disease diagnosis, Prescription Latin, and Extracts from Latin texts, including several from Hippocrates, Celsus, Harvey, etc. Swedish translations of the latter items are given opposite the Latin text and there are copious footnotes on syntax, etc.

Printing and binding are of excellent quality.—F.E.W.

SCHOENEWALD, F. S. [M.D. Berlin.] (1951.) **English-German medical dictionary.** pp. viii+242. London: H. K. Lewis & Co. Ltd. 35s. **1904**

This English-German dictionary is the companion volume to the German-English medical dictionary already reviewed in this Bulletin [*V.B.* **21**. 59]. The scope of this volume is identical with that of the first one.

Considerable care has been taken in the selection of phrases to illustrate the meanings of many of the words; the genders of the German substantives are given.—E.V.L.

Printed in Great Britain by C. Burrell & Son, Chertsey, Surrey